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### An Address.<sup>1</sup>

#### WINNING THE PEACE: THE DOCTOR'S CONTRIBUTION.

By F. L. WALL,

*Retiring President of the South Australian Branch of the British Medical Association.*

WORLD PEACE, international peace, or industrial peace must mean a cessation of hatred, controversy and misunderstanding between nations, empires, states and sections of society. Peace means the opposite to conflict and implies a state of mind set on maintaining peace and, whether we talk of world peace, or international peace, or industrial peace, or peace in the home or peace in the profession, it can be reduced to an attitude of mind: and that surely is a personal consideration.

But, strangely disappointing is evidence of "winning the peace" in this the third year of war's aftermath. Six successive years saw unity and self-sacrificing service, and we were saved the bondage of the Nazi and the Fascist creeds; but with the passing of the urgent wartime need for physical self-preservation we have suffered a reaction, physical, mental and moral. The unselfish and united fight for peace has partly given over to an individual and self-centred desire for ease.

Perhaps the world-wide malady which led to war has been misjudged. With the passing of its crisis, the convalescent stage of maladjustments and reactions has been subject to neglect. We are expecting a spontaneous recovery in the absence of specific convalescent medication.

Common danger united us, its aftermath finds us still desirous of that unity and yet tending to be individualistic.

<sup>1</sup> Read at the annual meeting of the South Australian Branch of the British Medical Association on June 23, 1948.

A degree of moral slackness would expectedly succeed a hypertension of the mind and spirit, but the present reaction is too marked and too prolonged. What treatment is suggested?

Surely we require some common objective to lead us on, some pole-star on which to march: something like a simple slogan, and yet inclusive of the spiritual and sublime. It must be easy to define and simple in its universal applicability.

It is my suggestion to propose one word to fit the dual purpose of medicament and the higher role of objective. The word is "happiness". What I mean is perfect or inner happiness.

Its use is philosophically sound, and here is a definition from a book by C. H. Richardson:

There are three elements in perfect happiness. (i) A sense of inner harmony and freedom from strain and conflict, not from effort, and a sense of satisfactory adjustment to one's surroundings, physical and moral. (ii) The element of self-fulfilment through effort and activity, especially creative activity, in which it is felt that all one's abilities are being called into play. (iii) A contemplative and appreciative attitude of mind, often combined with a sense of relaxation.

Please note that pleasure, joy and contentment are all features of happiness, but none of them is identical with it. They are comparatively transitory, while the nature of true happiness is one of comparative stability and permanence.

One thing about happiness (and I am speaking of true inner happiness) is of the utmost importance, and that is that human nature and the conditions of human existence are such that the happiness of each is bound up with the happiness of all. This fact can be applied to any aspect of the subject. Neither the selfish trickster nor the sadist obtains true happiness.

"Winning the peace", then, means that we must frame our general behaviour and our attitude towards life with the object of achieving true happiness, realizing fully that this involves working continuously for the

happiness of others. In making a decision involving our conduct we must adopt as our criterion the result likely to be reached in terms of the happiness of all concerned.

And now to its practical application, with particular reference to the medical profession: Were any single individual to conduct a self-examination in terms of this inner happiness pursuit, he would form an idea of his own attitude and aptitude in regard to "winning the peace". One might find great need for change in one's own mental sphere.

We all harbour mental rubbish. Regular incineration is quick and leaves no trace. Selfishness, snobbery, jealousy, anger, and a host of other noxious growths need regular extermination. Such rubbish stifles mental growth, it defaces our character, and its very inflammability is a constant menace to the security of our souls. Repeated application of this step is essential. Mental tidiness will much reduce our indecision, and will accelerate our powers of readjustment.

There is little doubt that such a thought would seldom enter the minds of hosts of people in the community.

Just how to incline the minds of such to the application of this principle is almost beyond the powers of our decision, but not entirely so, and that is where we come into the picture.

The close personal relationship with our patients which we doctors experience in our daily work is as unique in type as it is in scope, for throughout each day some one of us is treating each and every grade and subgrade of society.

Health and happiness are attributes so closely allied that our treatment may oft include a mental and a moral therapy with our physical medication.

This factor of an intimate doctor-patient relationship is sadly overlooked when regimentation of the medical profession is envisaged. It is well known to those whose experience in practice is mature, but not so well to the novitiates.

It is appropriate, therefore, that I should here interpolate that my remarks are directed in the main to the interest and the guidance, perhaps, of the oncoming members of our profession—those who have, as yet, not settled down fully into private practice, and to whom a knowledge of our medical heritage and of medical ethics is as yet immature.

It remains now to consider objectively our dealings with society.

How helpful would be a more adequate representation of doctors in Parliament. It is always simpler to negotiate with those who speak the same language, and who know their subject. I would advocate this profession for some women doctors—to foster the claims of the mothers and babies and to deal with housewives' problems in general.

Of recent times governments have evidenced special interest in medical matters; but mistakes may occur from precipitancy of action based too much upon an idea or an ideal and the mode of administration and cost thereof, and too little upon the precise result on the participating patients.

The medical profession has for centuries undertaken the honourable responsibility of safeguarding the health of the people; and we must never cease to plan, and our plans must continue on the very highest plane, namely, that which will result best for the health and happiness of the community. These plans and suggestions will be put up to the Government for implementation.

At times governments decide to introduce medical bills and then ask us to comment upon the mode of application, which is the reverse process. The British Medical Association, with its cautious advice begotten of much personal and practical medical experience, is surely in the best position to advise. The acceptance and strict maintenance of our sponsored principle should obviate the possibility of suspicion and mistrust between persons, classes of society, or governments.

One vital duty in constructing new bills is to distinguish between the material and the spiritual amenities which produce conditions favourable for the increase of health and happiness.

There is a tendency to concentrate too much on the former, or material, aspect to the neglect of the latter, or spiritual, side; and this tendency is most noticeable where plans are in hand for reconstituting society and conditions in which it exists. For instance, before planning to provide increased leisure, we must first provide proper means of usefully employing that leisure.

To widen our sphere of interest and our range of usefulness, greater representation of the medical fraternity in municipal and other public affairs is desirable.

So much then for the application of this principle to our public or political activities. Let us now deal with the matter of fostering happiness amongst our patients.

Most things I could say would merely stress the obvious, but a few particular points are worthy of emphasis.

We are indeed fortunate that our choice of profession has laid open to us such opportunities for service to the community; and establishment in private practice soon discloses to the young practitioner that the maintenance of the proper doctor-patient relationship is the first essential step in attempting to alleviate physical sickness or mental distress.

The background of the home carries a constant and subtle influence on the health and happiness of the entire family. We should concentrate more and more on advising parents in the proper management of their young children and babies. We can help these parents to banish the most prevalent modern curse in many homes. I mean anxiety and tension. Curtail your sedatives and augment your advice on adjustment.

Our advice must be simply stated always. We cannot ever do enough to help young parents in their child management and in their proper outlook on life, considerations so complicated at present by numerous home and housing problems and difficulties. Next to housing shortages as a cause of anxiety come the popular misconceptions of what is meant by "raising the standard of living". How many young people think that this implies limiting the size of their families in order to increase the supply of luxuries and amusements and outward appearances of prosperity!

Surely we doctors can advise the reversal of these ideas. Enlightenment, advice and encouragement are required, with a request that the last golden remedy, encouragement, should be used freely by the parents in every home.

Young graduates will appreciate that I am asking them to enter with interest and sympathy, more and more, into the homes and lives of their patients and to exercise their influence in procuring greater inner happiness for one and all.

Lastly, how can we increase happiness in our dealings with one another? We should always help and never hurt. Thoughtless criticism must be expunged between young and old practitioners, and this applies in either direction. We must guard against the use of words which, even when taken out of their spoken context, could offend. Help can ever be given one another; and generally this rests from the elder to the younger, and from the more experienced to the less experienced. The right attitude of understanding and tolerance is essential.

Returned ex-service medical men find that so many avenues of thought lead to a dead end at first exploration, that frustration and inferiority complexes creep in. These men require our help and we must give it. Assistantships and further partnerships must be envisaged, and "squatting", too. Unfortunately, present housing shortages curtail proper expansion of these three avenues.

One practical contribution which must be made by the established men is that vendors offer reasonable terms and lowered premiums in effecting these intraprofessional business transactions.

Private group practice carries advantages to both patients and partners concerned, and should be encouraged on broader lines and scope than apply at present. Specialists, as well as general practitioners, can enter groups or expand their existing organizations to include the oncomers.

A brief survey has been made of the methods open to doctors to improve the condition of life of their patients and themselves, so as to provide an environment in which

health and happiness can most readily flourish in this troubled post-war period. The soundness of this suggested philosophy of life can never be disputed, but its full adoption may be difficult and slow. So, thanking God for our unique opportunities, let us all employ it. What is it but the Golden Rule of life: "To do unto others that which we would that they should do unto us"? Let us do it, and thereby enable one and all to say: "*Pax vobiscum.*"

#### THE VALUE OF THE COOMBS TEST IN DETECTION OF ISO-SENSITIZATION OF THE NEWBORN.

By RACHEL JAKOBOWICZ, VERA I. KRIEGER<sup>1</sup> AND  
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A NEW METHOD of testing for "incomplete" Rh antibodies (Wiener's "blocking" antibodies) and for weak Rh agglutinins was described in 1945 by Coombs, Mourant and Race,<sup>(1)</sup> who found that rabbit anti-human globulin serum would agglutinate red blood cells which had adsorbed Rh antibodies onto their surface either *in vivo* or *in vitro*. It was thought that the rabbit anti-human serum reacted with the globulin part of the adsorbed antibodies. The test can be applied in two ways, which are referred to respectively as the "direct Coombs test" and the "indirect Coombs test".

In the direct test cells suspected of having been sensitized are exposed to the action of immune rabbit serum, which will agglutinate them if they have previously adsorbed antibody. In the indirect test a serum suspected of containing antibody is mixed with normal cells, which are subsequently tested with the immune rabbit serum.

Although the direct test is primarily used in investigations for Rh sensitization, it is not completely specific for Rh antibodies, and a positive reaction simply indicates sensitization of the red cells by an antibody capable of reacting with the rabbit anti-human serum. Coombs and his co-workers,<sup>(2)</sup> in discussing a series of 15 cases of hæmolytic disease of the newborn, report one case in which the sensitization was unrelated to the Rh system.

The indirect Coombs test is used to detect Rh antibodies in the serum of the mother or in the newborn baby. It is claimed that this test is very sensitive and detects weak concentrations of Rh antibodies.

Boorman and Dodd<sup>(3)</sup> have shown that the indirect Coombs test can detect antibodies due to ABO incompatibility. Having immunized a group O person with group A specific substance, they were able to sensitize group A cells with this patient's serum after preliminary treatment to remove normal iso-agglutinins.

Boorman *et alii*<sup>(4)</sup> have applied the direct Coombs test successfully in the differentiation of acquired hæmolytic leterus from the congenital type. Their work suggests that the former condition is probably due, in most cases, to some form of immunization which results in a positive response to the direct Coombs test, whilst in the latter there is an abnormality of the red blood cells themselves, and therefore no evidence of *in-vivo* sensitization is detected by the Coombs test.

Hill and Haberman<sup>(5)</sup> used the Coombs test to examine 365 different specimens of cord blood. The four positive reactions were obtained with blood from three babies suffering from erythroblastosis and from one which appeared to be normal.

Since it appeared that these new methods would either complement or prove to be even more sensitive than the older methods of detecting immunization, it was decided to apply them to the investigation of the blood of a large series of patients. A team of workers from the Commonwealth Serum Laboratories, from the Women's Hospital

and the Queen Victoria Hospital and from the Red Cross Blood Transfusion Service cooperated in this investigation. A potent anti-human rabbit serum was used in tests on 1130 blood samples from the Women's Hospital and on 450 samples from the Queen Victoria Hospital.

#### EXPERIMENTAL INVESTIGATION.

In the direct Coombs test the red blood cells suspected of having become sensitized *in vivo* are washed three times with large volumes of saline solution and are then resuspended in normal saline solution to a concentration of about 2%. The washed cell suspension is mixed with rabbit anti-human serum and agglutination indicates that the cells have been sensitized.

In the indirect test the patient's serum is incubated with Rh-positive red cells of the appropriate ABO group for one hour at 37° C. After centrifugation and removal of the serum the cells are washed three times with saline solution. They are then resuspended in saline solution and tested as in the direct Coombs test. If the patient's serum contains Rh antibodies the red cells become sensitized and are agglutinated when mixed with rabbit anti-human serum.

Red cell suspensions obtained from the cord blood of unselected subjects were used for the majority of the direct Coombs tests. In some instances red blood cells were obtained from the baby's capillary blood. One drop of the washed cell suspension was mixed with one drop of anti-human rabbit serum (adsorbed and suitably diluted) on a glass slide. After having stood for a few minutes at room temperature the mixture was examined for agglutination. The usual precautions against drying were taken when necessary.

#### RESULTS.

##### The Direct Coombs Test.

Of the 1530 specimens of blood investigated, 32 gave positive reactions to the direct Coombs test. The whole series was divided into four groups, according to whether the blood of the mother and that of the child were of (i) Rh and ABO compatible groups, (ii) Rh incompatible and ABO compatible groups, (iii) Rh compatible and ABO incompatible groups, or (iv) both Rh and ABO incompatible groups. The incidence of positive results to the direct Coombs test in each of these groups is shown in Table I.

TABLE I.

Results of the Coombs Test on Unselected Specimens of Cord Blood.

Group:	Mother and Child.	Number of Cases.	Result of Coombs Test.	
			Positive.	Negative.
I	Rh and ABO compatible	1079	5	1074
II	Rh incompatible, ABO compatible	244	22	222
III	Rh compatible, ABO incompatible	209	3	206
IV	Rh and ABO incompatible	48	2	46
		1530	32	1548

##### Group I: Rh and ABO Compatibility.

The first of these groups, comprising specimens from 1079 families in which there was neither Rh nor ABO incompatibility, serves as a control series. The results of the Coombs tests were positive in five instances (0.46%). This was an unexpected finding, especially as the babies were normal, except for slight jaundice in two of them, which, according to the evidence available, was nothing more than "physiological" jaundice. The result of the indirect Coombs test on the maternal serum treated with several samples of blood of the same blood group as the child was negative in each of these five cases. The detailed results of the laboratory findings and clinical data are correlated in Table IIA.

<sup>1</sup>This work was made possible by a grant to one of us (V.I.K.) from the National Health and Medical Research Council of Australia.



TABLE IIA.  
Group I: A B O and Rh Status Compatible in Mother and Child.

Case Number.	Obstetric History.		Maternal Blood.					Infant's Blood.				Condition of Child.
	Parity.	Obstetric Details in Previous Pregnancies.	Group.	Rh.	Rh Antibodies.			Group.	Rh.	Result of Coombs Test.		
					Aggl. <sup>1</sup>	Bl. <sup>1</sup>	Indirect Coombs Test.			Direct Coombs Test.	Indirect Coombs Test.	
I (WH) <sup>a</sup>	1		A	+	Absent.	Absent.	Absent.	A	+	Present.	Present.	Normal living child.
II (WH)	2	Miscarriage at five months.	O	+	Absent.	Absent.	Absent.	O	+	Present.	Present.	Normal living child.
III (WH)	1		O	+	Absent.	Absent.	Absent.	O	+	Absent ; 3 days later strongly present.		Child developed jaundice. Hemoglobin value 140% (22.6 grammes per centum). Blood examination, normal results.
IV (WH)	1		O	+	Absent.	Absent.	Absent.	O	+	Absent ; 3 days later strongly present.		Child developed jaundice. Hemoglobin value normal. Blood examination, normal results.
V (QVH) <sup>a</sup>	4	Three living children, one miscarriage.	A	Rh <sub>1</sub> Rh <sub>2</sub>	Absent.	Absent.	Absent.	A	Rh <sub>1</sub> Rh <sub>2</sub>	Present ; 4 days later absent.		Normal living child.

<sup>1</sup> Aggl. = agglutinating antibodies; Bl. = blocking antibodies.  
<sup>a</sup> WH = Women's Hospital; QVH = Queen Victoria Hospital.

Group II: Rh Incompatibility, A B O Compatibility.

There were 244 families in which the Rh status of the mother and that of the child were incompatible (Table IIB). Positive reactions were obtained to 22 (9.4%) of the direct Coombs tests on the cord blood of the babies in these families. Only two of the 22 babies appeared to be normal, whilst three were stillborn, 12 were jaundiced, four were anæmic, and one died shortly after birth, from congenital abnormalities.

There was sufficient clinical and serological evidence to show that 14 of these 20 babies suffered from hæmolytic disease of the newborn. The 14 included two stillborn babies, nine with jaundice and three with anæmia. Rh antibodies were present in the maternal serum in every case and were of the agglutinating type in two instances, of the "blocking" type in two instances, and of both agglutinating and "blocking" types in ten instances.

In the other six cases (Cases VIII, XII, XIII, XIX, XXI and XXVI) the diagnosis was less certain, since the clinical evidence suggesting Rh immunization was slight. They can be divided into two groups. Group A includes two babies (Cases XIII and XIX) who became jaundiced although the blood picture was normal and the hæmoglobin level was not appreciably lowered at birth. However, Rh antibodies were found in the serum of both mothers, and these were related to the pregnancy in question, since in one they were absent in the earlier months of pregnancy but were demonstrable near term, and in the other they appeared after delivery. In group B neither agglutinating nor "blocking" antibodies were found in the serum of any of the mothers, and the clinical manifestations may have been due to other causes. This group included one baby which was prematurely stillborn with anencephaly (Case VIII), another which died and had multiple congenital abnormalities (Case XXVI), a third which developed jaundice without appreciable anæmia (Case XXI), and a fourth which had a mild anæmia ten days after birth (Case XII).

As was stated at the beginning of this section, two babies appeared to be normal. In one of these instances (Case XXVII), except for the positive response to the direct Coombs test, there was nothing to suggest that immunization had occurred; but in the other (Case XXV) traces of "blocking" antibodies were found in the mother's serum, and this finding was confirmed by the positive result of the indirect Coombs test on the maternal serum. The effect of the antibodies was so slight that no clinical signs of hæmolytic disease were detected in the baby.

Thus in the majority of cases in group II the direct Coombs test confirmed the clinical and serological evidence of Rh sensitization; but in some cases in which positive results were obtained to the Coombs test there was insufficient evidence to prove or disprove the idea that Rh antibodies were the cause of the sensitization of the foetal cells.

Group III: Rh Compatibility and A B O Incompatibility.

In the third group (Table IIC), in which the A B O status but not the Rh status of mother and child were incompatible, the direct Coombs test produced a positive result from the cord blood of three (1.4%) of the 209 infants. In two cases (Cases XXVIII and XXIX) the children were secretors, and ten days after delivery the titre of the maternal iso-agglutinins corresponding to the infant's red cell antigen was found to be raised. In the third case (Case XXX) no titration was carried out at delivery, but the maternal iso-agglutinin titre was higher than normal some days later; the child was not investigated for the secretor state. One child had no manifestations of hæmolytic disease, but the other two developed jaundice and one of them also had a late anæmia and required transfusion therapy.

These facts suggest that some cases of anæmia and jaundice which appeared to be other than of the merely "physiological" type may be due to the action of anti-A or anti-B agglutinins, and that a positive response to the direct Coombs test may be obtained from red cells which have been sensitized by these agglutinins.

Group IV: Rh Incompatibility and A B O Incompatibility.

The fourth group consisted of 48 families (Table IID) in which there was both Rh and A B O incompatibility between the infant's and its mother's blood. In two instances the red cells from the cord blood gave positive reactions to the direct Coombs test. In both instances Rh antibodies were found in the maternal serum. The A B O iso-agglutinin titre was raised in one of these cases, but was not determined in the other. There is no statistical difference in the proportion of positive results to the Coombs tests in the groups in which the blood of mother and that of the child show only Rh incompatibility (group II) and that in which there is both Rh and A B O incompatibility (group IV).



TABLE IIB.

Group II: ABO Status Compatible, Rh Status Incompatible in Mother and Child.

Case Number.	Obstetric History.		Maternal Blood.					Infant's Blood.				Condition of Child.
	Parity.	Obstetric Details in Previous Pregnancies.	Group.	Rh.	Rh Antibodies.			Group.	Rh.	Rh Antibodies.		
					Aggl. <sup>1</sup>	Bl. <sup>1</sup>	Indirect Coombs Test.			Direct Coombs Test.	Indirect Coombs Test.	
VI (WH) <sup>a</sup>	4	Three stillbirths.	B	—	1	4000		O	+	+++		Stillborn; hydrops foetalis.
VII (WH)	1	No history of blood transfusions.	O	—	1	64		O	+	++		Child stillborn, cord yellow, yellow vernix. Preeclampsia and obstetrical complication thought reason for stillbirth. Post-mortem report did not confirm erythroblastosis.
VIII (WH)	?	?	A	—	Absent.	Absent.		O	+	+		Premature stillborn child; anencephalic.
IX (QVH) <sup>a</sup>			O	—	8; 2 days later, 250 <sup>a</sup>	Absent.		O	Rh <sub>2</sub>	++		Two days after birth, haemoglobin value 87% (12.18 grammes per centum). Erythrocytes 3,600,000 per cubic millimetre.
X (QVH)	2	One living child.	A	—	1 1	2; 6 days later, 64		O	Rh <sub>1</sub> Rh <sub>2</sub>	++ +		Normal when discharged from hospital. Late anaemia, given transfusion six weeks later.
XI (QVH)	3	Two living children.	B	—	Absent.	1; 8 days later, 4		B	+	++	+	Normal when discharged from hospital. Late anaemia, given transfusion four weeks later.
XII (QVH)	1		A	—	Absent.	Absent.		O	+	+		Normal at delivery; slight anaemia at 10 days.
XIII (QVH)	2	One living child.	A	—	1	0		O	+	++	++	Slight jaundice, no effect on blood picture.
XIV (WH)	4		A	—	1	0		A	+	++ later, ++		Severe jaundice. Haemoglobin value 64% (8.96 grammes per centum). Erythrocytes 2,600,000 per cubic millimetre. Two transfusions in first 15 days.
XV (WH)	8	Four children alive and well, three miscarriages (two induced).	A	—	1	8		O	+	++		Slight jaundice. Haemoglobin value 120% (16.8 grammes per centum). Anisocytosis, marked polychromasia, a few nucleated red cells.
XVI (WH)	2	First child normal.	O	—	1	128		O	+	++++		Baby very ill, jaundiced. Transfusion immediately after birth, two more in next 33 days.
XVII (WH)	5	Two living children, normal; third erythroblastotic—died in two days; fourth erythroblastotic—lived.	A	—	1	32		A	+	+		Covered with yellow vernix. Very jaundiced, but of green colour. Had enlarged liver and spleen. Haemoglobin value 87% (12.18 grammes per centum). Erythrocytes 3,400,000 per cubic millimetre. Numerous nucleated erythrocytes. Transfusion on first day; four further transfusions in 55 days.
XVIII (WH)	2	First baby <i>icterus gravis</i> —died. Anti-Rh titre 16, two weeks later.	A	—	1	32	+++	A	+	++		Jaundiced two hours after birth. Haemoglobin value 101% (14.1 grammes per centum) dropped to 81% (11.34 grammes per centum) in 24 hours. Erythrocytes 2,800,000 per cubic millimetre. Died. Post-mortem report <i>icterus gravis</i> , kernicterus.
XIX (WH)	6	Four living children, alive and well; one stillbirth.	A	—	4	8		O	+	+		Baby not jaundiced on day of birth, but gradually became so. Haemoglobin value 120% (16.8 grammes per centum).
XX (WH)	4	Three living children; second child had two haemorrhages from bowel.	O	—	4	2000		O	+	++		Very jaundiced at birth. Haemoglobin value 58% (8.1 grammes per centum). Died within 24 hours.
XXI (WH)	3	Two living children.	B	—	Absent.	Absent.		B	+	+		Slight jaundice. Haemoglobin value 160% (22.4 grammes per centum) on third day.
XXII (QVH)	5	Two living children, one miscarriage, one child with <i>icterus gravis</i> .	O	—	2; 5 days later, 4	8; later, 16		O	+	++	+	Marked jaundice, anaemia. Numerous transfusions. Recovery.

<sup>1</sup> Aggl. = Agglutinating antibodies; Bl. = Blocking antibodies.<sup>a</sup> WH = Women's Hospital; QVH = Queen Victoria Hospital.<sup>b</sup> 10 weeks later.<sup>c</sup> 12 days later.<sup>d</sup> 10 weeks later.

TABLE IIB.—Continued.  
Group II: ABO Status Compatible, Rh Status Incompatible in Mother and Child.—Continued.

Case Number.	Obstetric History.		Maternal Blood.					Infant's Blood.				Condition of Child.
	Parity.	Obstetric Details in Previous Pregnancies.	Group.	Rh.	Rh Antibodies.			Group.	Rh.	Rh Antibodies.		
					Aggl. <sup>1</sup>	Bl. <sup>1</sup>	Indirect Coombs Test.			Direct Coombs Test.	Indirect Coombs Test.	
XXIII (QVH) <sup>a</sup>	4	Three living children.	O	—	0	4; 10 days later, 16		O	Rh' later, Rh <sub>1</sub>	++	+++	Jaundiced two days after birth. Palpable spleen. Five days after delivery, haemoglobin value 80% (11.2 grammes per centum). Erythrocytes 4,000,000 per cubic millimetre.
XXIV (QVH)	2	One premature twin pregnancy.	A	—	1 1 1 0	32 <sup>a</sup> 32 <sup>a</sup> 32 <sup>a</sup> 8 <sup>a</sup>		A	+	++ —	+	Severe jaundice and anaemia.
XXV (WH) <sup>a</sup>	3	One miscarriage, one normal child, one died at three months.	O	—	Absent.	1	++	O	+	+		Child normal.
XXVI (QVH)	1		A	—	Absent; 7 days later, absent.	Absent. Absent		A	+	+		Living child—died. Multiple congenital abnormalities.
XXVII (WH)	6	Four living children, one miscarriage.	A	Rh <sub>1</sub>	Absent.	Absent.		A	Rh <sub>1</sub> Rh <sub>2</sub>	++		Normal.

<sup>1</sup> Aggl. = Agglutinating antibodies; Bl. = Blocking antibodies.

<sup>a</sup> WH = Women's Hospital; QVH = Queen Victoria Hospital.

<sup>a</sup> Five days later.

<sup>a</sup> 12 days later.

<sup>a</sup> 10 weeks later.

#### Possible Immunization not Detected by the Direct Coombs Test.

The data reported so far are concerned with cases in which the Coombs test produced positive results. However, there were instances in which the test produced negative results in spite of clinical or serological evidence suggesting immunization.

In 46 cases these features were the clinical manifestations of jaundice, of anaemia or of both of these conditions. In all except two of these cases there was either Rh or ABO incompatibility between mother and child (see Table III).

In 41 cases there was serological evidence of immunization with or without clinical manifestation. This group includes seven cases in which Rh antibodies were present in the maternal serum and there was Rh incompatibility between mother and child in four of them. (This group is discussed in detail in the next section.) In the remaining 34 cases the mother and child were of Rh compatible and ABO incompatible groups. Ten of the babies showed some clinical effects and are also included in the series shown in Table III. The maternal serum

was examined for a post-natal rise in iso-agglutinin titre, and the cord blood was examined for water-soluble receptor substances (see Table IV). The latter were found in 27 of these cases—that is, the children belonged to the so-called secretor group and the foetus was therefore capable of immunizing the mother.<sup>(6)</sup> In 13 of the 27 cases a rise in the maternal serum titre of the iso-agglutinin which corresponded to the blood group antigen of the infant suggested that such immunization had occurred. In a number of these cases iso-agglutinins were present in the cord blood, but they were always those corresponding to the child's blood group—for example, anti-B agglutinins in the cord blood of a child whose red blood cells belonged to group A. It was difficult to decide whether these antibodies were entirely due to formation by the child itself or were partially the result of transference of maternal antibodies through the placenta into the fetal circulation.

Halbrecht<sup>(7)</sup> and Wiener<sup>(8)</sup> suggest that the A and B factors play an important part in the pathogenesis of those cases of jaundice which develop within forty-eight hours of birth and which are not due to Rh incompatibility. Although many such cases are classified as "physiological"

TABLE IIC.  
Group III: ABO Status Incompatible, Rh Status Compatible in Mother and Child.

Case Number.	Obstetric History.		Maternal Blood.				Infant's Blood.				Condition of Child.
	Parity.	Obstetric Details in Previous Pregnancies.	Group.	Rh.	Iso-Agglutinins.		Group.	Rh.	Result of Coombs Test.		
					Anti-A.	Anti-B.			Direct.	Indirect.	
XXVIII (QVH) <sup>1</sup>	1		O	+ (Rh <sub>1</sub> )	64 1000 <sup>a</sup>	32 32 <sup>a</sup>	A (Secretor)	Rh <sub>1</sub>	+	A cells —	Mild jaundice — late anæmia. Given blood transfusion at four weeks.
XXIX (QVH)	3	Two living children.	O	+	64 2000	32 32	A (Secretor)	+	+		Normal living child.
XXX (WH) <sup>1</sup>	1		O	—	1000		A	—	+		Jaundiced.

<sup>a</sup> QVH = Queen Victoria Hospital; WH = Women's Hospital.

<sup>a</sup> Ten days later.

TABLE IID.  
Group IV: ABO as well as Rh Status Incompatible in Mother and Child.

Case Number.	Obstetric History.		Maternal Blood.						Infant's Blood.				Condition of Child.	
	Parity.	Obstetric Details in Previous Pregnancies.	Group.	Rh.	Iso-Agglutinins.		Rh Antibodies.			Group.	Rh.	Rh Antibodies.		
					Anti-A	Anti-B	Aggl. <sup>1</sup>	Bl. <sup>1</sup>	Indirect Coombs Test.			Direct Coombs Test.		Indirect Coombs Test.
XXXI. (WH). <sup>1</sup>	2	Normal living child.	O	—			—	32		B	+	++ ++. <sup>4</sup>		Child normal.
XXXII. (QVH). <sup>1</sup>	7	Six living children.	A	—		120 <sup>3</sup>	— 1	1 64	120	AB (Secretor)	+	++	—	Slightly anæmic.

<sup>1</sup> WH = Women's Hospital; QVH = Queen Victoria Hospital.

<sup>2</sup> Aggl. = agglutinating antibodies; Bl. = blocking antibodies.

<sup>3</sup> Six days later.

<sup>4</sup> Eight days later.

jaundice, they do not seem to belong to this category, since in a series of jaundiced babies ABO incompatibility between the cells of the child and the serum of the mother was found by Halbrecht in 95% of his cases and by Wiener in 81%. On the other hand, in a group of normal babies such incompatibility was present in only 25%. In many of these jaundiced babies there was an associated mild anæmia, but spontaneous recovery was the rule. In some cases the anæmia became sufficiently pronounced to make transfusion therapy necessary, and a few of the babies showed the typical picture of erythroblastosis and died.

If the ABO incompatibility was responsible for the anæmia and jaundice found in 27 of the cases in Table III, then the Coombs test was of no advantage in these cases.

*Significance of a Negative Result to the Direct Coombs Test in the Presence of Rh Antibodies in the Maternal Serum.*

In the seven cases referred to above the results of the direct Coombs tests were negative, yet there was Rh incompatibility between the mother and child in four cases and Rh antibodies were present in the serum of all seven mothers (Table V). In three cases (Cases XXXIII, XXXIV and XXXV) the baby's blood was Rh-negative, and immunization in a previous pregnancy was probably responsible for the antibodies present in the mother's serum. Two of these babies were normal; the third was premature and died.

In the other four cases (Cases XXXVI, XXXVII, XXXVIII and XXXIX) there was Rh incompatibility between the mother and child. Two of the babies (Cases XXXVII and XXXVIII) appeared to be normal, in spite of slightly increasing amounts of Rh antibodies in the mother's serum before delivery in one case and of small but increasing amounts of them after delivery in the other. The third baby (Case XXXVI) was slightly jaundiced, but the titre of antibodies in the mother's serum was low. The remaining case (Case XXXIX) is interesting,

since the child developed marked *icterus gravis*, and a high titre of Rh "blocking" antibodies was present in the maternal serum. The infant's blood appeared to be Rh-negative and the direct Coombs test produced a negative result. These results may have been due to the fact that the child had been given a blood transfusion before the taking of the blood sample sent for investigation.

A valuable application of the direct Coombs test is found in those cases in which the result of the direct Coombs test on the cord cells is negative and yet antibodies are found in the maternal serum. If the blood of the baby is Rh-positive and it fails to react with Coombs serum, the antibodies, which are usually of low titre, seem to be unable to affect the child to the extent of causing visible clinical symptoms.

In some cases in which the baby's blood appears to be Rh-negative this finding is due to coating with Rh antibody. In such cases the direct Coombs test will produce a positive result.

A negative response to the Coombs test of the baby's cells, together with apparent Rh-negative status, in cases in which the mother's serum contains Rh antibodies, is therefore valuable confirmation of the absence of the Rh factor from the baby's cells. In such cases the antibodies in the maternal serum can usually be shown to have survived from immunization in a previous pregnancy. Clinical complications are unlikely to occur in such cases.

*Duration of Sensitization Indicated by Coombs Tests.*

We have not investigated sufficient cases to state how long after birth the babies' cells will give a positive reaction to the Coombs test. In three of four cases in which the cord blood gave positive reactions, similar results were again obtained five to ten days after birth. The Coombs test produced a negative result on the sixth day in the fourth case.

Montgomery,<sup>(5)</sup> who investigated twelve cases, found that the Coombs test produced a positive result at birth, but that negative results were usually obtained after a few days.

TABLE III.  
Result of Coombs Test Negative: Clinical Evidence of Possible Immunization without Supporting Serological Evidence.

Group.	Clinical Manifestations.					Total.
	Jaundice.	Jaundice and Anæmia at Birth.	Jaundice and Late Anæmia.	Anæmia at Birth.	Late Anæmia.	
Mother and Child.						
I. A B O status compatible, Rh status compatible ..		1		1		2
II. A B O status compatible, Rh status incompatible ..	3	2	2	2	8	17
III. A B O status incompatible, Rh status compatible ..	1	5	1	11	8	26
IV. A B O status incompatible, Rh status incompatible ..		1				1
Total .. .. .	4	9	3	14	16	46



*Development of a Positive Coombs Reaction a Few Days after Birth.*

In two of the families in group (I) of our series the mothers and babies were Rh-positive and Coombs tests on the cord blood produced negative results. Both of the babies developed jaundice, and on the third day strong positive reactions were obtained to Coombs tests on their red blood cells. No reason for the sensitization could be found and both babies recovered without the need for transfusion therapy.

*Intensity of the Coombs Reaction.*

The intensity of the reaction to the Coombs test varied and it did not always correspond to the titre of Rh antibodies in the maternal serum or to the severity of the hæmolytic disease in the child.

**The Indirect Coombs Test.**

*Maternal Serum.*

The indirect Coombs test was not carried out as a routine test, and it has been used to examine the serum of only 48 mothers. Twenty-eight of the mothers were Rh-negative, and in all cases the positive result of the indirect Coombs test confirmed the presence of Rh antibodies already detected in the maternal serum by the ordinary tests. Twenty mothers were Rh-positive and 17

TABLE IV.

*Result of Coombs Test Negative: Serological Investigations for Possible Immunisation: Mother and Child Rh Compatible, ABO Incompatible.*

Secretor Status.	Rise in Maternal Titre.	No Rise in Maternal Titre.
Secretors (27) .. ..	13	14
Non-secretors (7) ..	0	7

of them had babies which developed jaundice. There was no Rh subtype or ABO incompatibility between the mothers and their babies. No antibodies were detected in the maternal serum either by the usual methods or by the indirect Coombs test, and it appears that the jaundice was of the "physiological" type. A finding that is difficult to explain is the positive direct Coombs reactions obtained when the cord cells of two of these jaundiced babies and of three normal babies were examined. Reference has been made to these five cases in an earlier section (group I).

*In Cord Blood.*

The indirect Coombs test on the cord blood was performed in only nine instances and positive results were obtained in seven. In five of these cases (Table IIa) there was incompatibility in the Rh status of mother and baby, Rh antibodies were found in each mother's serum, and every child was affected. In two cases (Table IIa) the result of the direct Coombs test was also positive; but the children were normal and there was no other evidence of iso-immunization.

Negative results were obtained in two cases (Tables IIc and IIb). In one of them there was ABO incompatibility with a rise in anti-A titre; in the other, in which there was both ABO and Rh incompatibility, Rh antibodies and a raised anti-B titre were found in the maternal serum. In both instances the direct Coombs test produced a positive result and the children were affected.

The detection of Rh antibodies in cord serum by the use of the indirect Coombs test appears to be useful as a sensitive method of demonstrating free antibodies in the child's serum.

**SOME OBSERVATIONS DURING THE INVESTIGATION.**

The following interesting observations were made during the course of the investigation.

**Errors in the Determination of the Type of Rh Factor due to Action of "Blocking" Antibodies or to Transfusion of Rh-Negative Blood.**

In two cases the direct Coombs test on the cord cells produced a positive result and the cells appeared to be of type Rh', although the presence of Rh<sub>0</sub> "blocking" antibodies in the maternal serum indicated stimulation by an Rh<sub>0</sub> antigen. In later tests the results in the direct Coombs test were negative and the red cells were classified as Rh<sub>0</sub>. Apparently the coating of the infant's cells with Rh<sub>0</sub> antibodies was so complete that the cells gave the serological reactions corresponding to Rh' blood. Such cases have already been reported by other workers.

In a third case the child appeared to be Rh-negative and yet had pronounced *icterus gravis*. The first sample of blood tested by us was taken after a transfusion of Rh-negative blood, and the result of the direct Coombs test was negative; but the indirect Coombs test on this blood produced a positive result. Nineteen days later the direct Coombs test still produced a negative result. The baby then received a second transfusion. Blood was again examined at twelve weeks, and whilst the result of the Coombs test was still negative the Rh test result was positive, the blood being of type Rh<sub>0</sub>. A trace of Rh agglutinins as well as a high concentration of "blocking" antibodies (titre 200) was found in the maternal serum sent at the same time as the first blood specimen from the child. The apparent absence of Rh factor in the original tests on the infant's blood may be explained in two ways: firstly, the child's red blood cells may have been completely coated with Rh "blocking" antibodies so that they failed to be agglutinated by potent anti-Rh<sub>0</sub> testing serum; or secondly, there may have been so few of the infant's red blood cells mixed with the transfused blood that the Rh factor could not be detected. The latter explanation is the more probable in view of the negative result of the direct Coombs test. The destruction of the infant's own cells must still have been very great, even after the lapse of nineteen days, since the child's blood still appeared to be Rh-negative and the concentration of hæmoglobin was so low that a further transfusion was necessary. Excessive destruction or inhibition of erythropoiesis of the child's cells had ceased by the twelfth week, since the Rh factor could then be detected.

**Rh Antibodies in the Serum of a Mother Having an Rh-Negative Child.**

In another family the mother and baby were both Rh-negative and the Coombs test produced a negative result, but Rh antibodies were found in the mother's serum both before and after delivery. The mother had had four living children prior to a miscarriage in 1946. A few months later she again became pregnant and Rh "blocking" antibodies (titre eight) were shown to be present in the blood obtained on her first visit to the ante-natal clinic. The antibody titre remained constant throughout her pregnancy. She was delivered of a healthy, full-term child, whose cells gave a negative response with anti-Rh<sub>0</sub>, anti-Rh', anti-Rh" and Coombs sera. "Blocking" antibodies were detected in the cord serum in the same strength as in the maternal serum. Apparently Rh antibodies formed during the fifth pregnancy had passed through the placenta, and since there were no Rh-positive fetal cells to adsorb them, the titre remained at the same level in both the fetal and the maternal blood. The titre of the maternal antibodies did not rise after delivery and the child remained healthy.

**Sensitization of Donor's Cells in Vivo.**

The following history is interesting, since the direct Coombs test showed that sensitization of donor cells may have occurred as the result of immunization following blood transfusions.

A single woman, who had had persistent hæmorrhage for six months, and was found to be suffering from a carcinoma of the cervix, was given two blood transfusions, after which no reactions were observed. One month later, after she had been given only 200 millilitres of blood at the third transfusion, she developed vomiting, severe rigor and anuria.

TABLE V.  
Result of Coombs Test Negative, but Other Evidence Suggesting Immunization.

Mother and Child.	Case Number.	Maternal Blood.						Cord Blood.			Clinical Data.
		History of Previous Pregnancies.	Group.	Rh.	Rh Antibodies.			Group.	Rh.	Direct Coombs Test.	
					Aggl. <sup>1</sup>	Bl. <sup>1</sup>	Indirect Coombs Test.				
A B O and Rh groups compatible.	XXXIII	Three stillbirths near term. Miscarriage at ten weeks.	B	-	32 4 8	64 (5/12) 4 (8/12) 32 (delivery)	---	B	-	-	Normal baby.
	XXXIV	First and second pregnancies normal; third, <i>icterus gravis</i> . Two blood transfusions.	O	-	1 1	64 (6/12) 64 (delivery)	---	O	-	-	Normal baby.
	XXXV	Two living children.	A	-	2	8	---	A	-	-	Premature baby, died.
A B O compatible, Rh incompatible	XXXVI	Four living children, one miscarriage.	B	-	1	2	---	O	+	-	Baby jaundiced.
	XXXVII	One living child (hyperemesis).	O	-	1 4	2 (delivery) 32 ( <i>post partum</i> )	---	O	+	-	Normal baby.
	XXXVIII	Full-term stillborn baby 19 years ago; 17, 15 and nine years ago normal term pregnancies; seven years ago stillborn baby at eight months; six years ago miscarriage; five years ago stillborn, full term; one year ago miscarriage at 4-5 months.	A	-	2 2 4 4	2 (7-5/12) 16 (9/12) ? (delivery) 16 ( <i>post partum</i> )	--- --- ---	O	Rh <sub>0</sub>	-	Normal baby. Hemoglobin value first day, 120%; eleventh day, 140%. Erythrocytes 5,100,000 per cubic millimetre. At two weeks, hemoglobin value 120%, at three weeks 118%, at 5-6 weeks 84%. Erythrocytes 4,000,000 per cubic millimetre. Hemoglobin value at seven weeks, 81%. Erythrocytes 3,910,000 per cubic millimetre. Hemoglobin value at 11 weeks 80%. Erythrocytes 4,400,000 per cubic millimetre. Hemoglobin value at 16 weeks 85%.
	XXXIX	First pregnancy normal. Second child jaundiced.	O	-	1	200	+++	O O <sup>a</sup> O <sup>a</sup>	- - Rh <sub>0</sub> <sup>a</sup>	- - - <sup>a</sup>	Third pregnancy, baby very ill, needed immediate transfusion. At 12 weeks Coombs test result negative, baby Rh <sub>0</sub> .

<sup>1</sup> Aggl. = agglutinating antibodies; Bl. = blocking antibodies.

<sup>2</sup> Indirect Coombs test result, "+++" after a blood transfusion.

<sup>3</sup> Nineteen days later.

<sup>4</sup> Twelve weeks later.

Washed cells of blood obtained from the patient after this transfusion yielded a strongly positive direct Coombs reaction.

Apparently antibodies formed following one or both of the earlier transfusions were adsorbed onto the donor cells at the third transfusion which was given to the patient. These antibodies were present in sufficient quantity to give a reaction when the blood from the patient obtained after this transfusion was tested by means of the direct Coombs test. This immunization had other peculiar features, which will be reported elsewhere (Krieger and Simmons, in the press).

#### DISCUSSION.

The conclusions which may be drawn from the results of our investigations are as follows.

It can be stated that the direct Coombs test gave a positive result in all cases except one, in which Rh antibodies were found in the blood of the mother and the baby was obviously suffering from erythroblastosis. The exception was one in which the baby was given a blood transfusion prior to the performance of the Coombs test.

Thirty-two positive results were obtained in our series of 1580 Coombs tests on specimens of cord blood. Rh antibodies or raised anti-A agglutinin titres were detected in the serum of 22 of the mothers. In nineteen cases there was clinical evidence of erythroblastosis. Thus the conclusion is justified that the direct Coombs test provides a useful confirmation of the usual tests for isoimmunization.

In the ten cases in which positive results in the Coombs tests were not supported by other serological findings, clinical evidence in four of them suggested that immuniza-

tion of the mother had occurred and that the baby had been affected as the result of it. The Coombs test therefore appears to be a sensitive means of detecting cell sensitization in some instances in which other serological evidence is lacking. In the remaining six cases there was neither serological nor clinical evidence that immunization might have occurred. In all except one the Rh as well as the A and B status of the mother and child was compatible and the babies were normal. It is possible that the infant's red blood cells may have been sensitized to antibodies other than those derived from the Rh, A or B factors. Although unsuccessful attempts were made with samples of red blood cells from various donors to demonstrate such antibodies in the maternal serum, it is possible that they were of rare types, which could be detected only by the use of the father's red blood cells or of a large number of different red blood cells. From these results it appears, therefore, that a positive result to the Coombs test may be obtained on rare occasions with the baby's blood when the mother has not been immunized by Rh or other common agglutinins. The possibility that occasionally a false positive reaction may be obtained to the Coombs test cannot be excluded, in view of the lack of clinical and other serological evidence to indicate immunization in these cases.

In a number of cases the result of the direct Coombs test was negative, although a positive result had been expected because Rh antibodies were found in the mother's blood during the ante-natal period. Analysis of these cases disclosed that, since some of the babies were Rh-negative, the antibodies in the serum of these mothers had obviously been formed during a previous pregnancy. In others, however, the baby's blood contained the Rh

factor, yet the direct Coombs test produced a negative result. The titre of the Rh antibodies in the maternal serum was always low, so that too small a proportion of the child's red cells may have become sensitized to give a positive reaction to the Coombs test or to cause clinical symptoms other than the slight jaundice observed in one baby.

A negative response to the direct Coombs test on the cord blood of a newborn baby when antibodies have been detected in the serum of the mother will allow one to predict, on the first day of the child's life, that it is unlikely to develop erythroblastosis. In our opinion, this will prove to be a useful guide in the management of such cases.

Fœtal sensitization by anti-A and anti-B agglutinins is a much less common cause of severe hæmolytic disease in the newborn than is Rh immunization. It is possible that receptor substances present in the body fluids of secretors neutralize these antibodies, and that it is only when the balance between antibodies and receptor substances is disturbed that erythroblastosis may develop. Wiener, however, thinks that the incomplete state of development of the fœtal agglutinogens is of more importance in protecting the red cells from maternal iso-agglutinins than is the secretor status of the fœtus.

There were 16 cases in which a post-natal rise in the maternal iso-agglutinin titre corresponding to the blood group antigen of the child was observed. Only two of these babies showed any clinical evidence of erythroblastosis, and in both instances the Coombs test produced a positive result. The test on a third baby also produced a positive result, but the baby showed no clinical signs of hæmolytic disease. From this small series it appears that the direct Coombs test may be useful in indicating the babies likely to be affected by an ABO incompatibility.

The indirect Coombs test on the maternal serum is useful in confirming the presence of Rh antibodies detected by the usual methods. Whilst this test never detected antibodies which were not shown to be present by other methods, it can be of great help in those cases in which the agglutination observed in the usual tests is very weak.

#### SUMMARY.

1. The results of the direct Coombs test on 1580 specimens of cord blood and of the indirect Coombs test on 48 specimens of maternal serum and of nine of cord serum are reported and discussed.

2. The direct Coombs test appears to be slightly more sensitive than other methods of detecting Rh immunization, although occasional positive reactions are observed in the absence of any clinical or other serological evidence of immunization.

3. The prediction that an infant is unlikely to develop erythroblastosis can be made on the first day of its life if the result of the direct Coombs test is negative, in spite of the presence of Rh antibodies in the serum of its mother.

4. The result of the direct Coombs test is only occasionally positive in cases of ABO incompatibility between mother and child; in two of the three cases of this kind in our series in which the Coombs test produced a positive result, there was also jaundice, anaemia or both in combination. A positive result to the Coombs test should therefore give warning of the possible development of clinical manifestation of hæmolytic activity.

5. In some cases, the direct Coombs test may reveal that the apparent Rh-negative status of the newborn infant's blood is due to coating with Rh "blocking" antibodies.

6. The indirect Coombs test is useful in confirming the presence of small concentrations of antibodies in the maternal or in the infant's serum.

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## RELAXING AGENTS IN ANÆSTHESIA: A BRIEF APPRAISAL.<sup>1</sup>

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THE object of the use of relaxing agents in anæsthesia is to provide adequate muscular relaxation without recourse to unduly deep narcosis. Two distinct means are available for this purpose, involving the use of either (i) curare preparations, or (ii) "Myanesin", a new synthetic drug. These alternatives are quite distinct chemically, as well as in their mode of action. Thus, their clinical effects and range of utility also differ. Both will produce good relaxation in appropriate circumstances.

### Curare.

#### Identification.

The active principle of curare, d-tubocurarine chloride, was first isolated in its pure crystalline state by H. King, of London, in 1935.<sup>(1)</sup> He also identified the essential source, the South American plant *Chondrodendron tomentosum*. Previously the origin had been wrongly assigned to various members of the *Strychnos* genus.<sup>(2)</sup>

#### Pharmacology.

Curare either impairs or suppresses impulse transmission of cholinergic type. The effect is greatest at the somatic neuro-muscular terminals. The susceptibility of muscle groups varies progressively; the intercostal muscles and the diaphragm are fortunately the least affected by a given dose. Curare also acts at the preganglionic autonomic synapses and the parasympathetic terminals; but there is no appreciable effect here with ordinary dosages. Large dosages, however, may favour the onset of shock, from interference with vasomotor impulses at the preganglionic sympathetic synapses.

#### Preparations.

The following preparations have been found reliable for clinical use: (a) "Intocostrin", an aqueous extract of the crude drug, and (b) aqueous solutions of the active principle, notably "Tubarine".

"Intocostrin" (E. R. Squibb and Sons), the first properly standardized preparation, was introduced in 1940. It was used extensively to lessen the convulsions incidental to the shock therapy of certain mental disorders.<sup>(3)</sup> Its first use in anæsthesia was reported in 1942 by H. R. Griffith, of Montreal, Canada.<sup>(4)</sup> Later, it was studied extensively in the United States of America<sup>(5,6)</sup> and in England;<sup>(7)</sup> eventually it was introduced to Australia in 1945.<sup>(8)</sup> It gave very satisfactory results, being devoid of serious side effects. Unfortunately it was found to deteriorate on storage.

The dosage of "Intocostrin" is properly expressed in units, and not in milligrammes, as was done erroneously

<sup>1</sup>Based on a report to the Section of Anæsthesia of the New South Wales Branch of the British Medical Association on April 20, 1948.



in all earlier reports.<sup>(10)</sup> It contains 20 units of active substance per millilitre. The average initial dose is 60 units (three millilitres), given intravenously. A basis of six units per stone of body weight is useful for calculating probable requirements. "Intocostrin" acts rapidly, the effect being maximal in from three to five minutes, thereafter subsiding over the next twenty or thirty minutes. It may be given intramuscularly, but larger doses are then required, and its action is slower and less certain. However, it is useful in this way for providing a sustained effect in long operations.

Two preparations of the pure drug, d-tubocurarine chloride, are available here. The chief is "Tubarine" (Burroughs Wellcome and Company<sup>1</sup>). It is supplied as an aqueous solution, containing 10 milligrammes per millilitre, in ampoules and vials of 1.5 and 5.0 millilitres respectively. A Drug Houses of Australia product of similar composition is supplied in ampoules of two millilitres, each containing 20 milligrammes. "Tubarine" has been extensively studied in England, the results being generally excellent.<sup>(10) (11)</sup>

The potency of "Tubarine" is high and its action is constant. It exhibits no deterioration on storage. The average initial dose is 15 milligrammes (1.5 millilitres) given intravenously. The dosage may be calculated on the basis of 1.5 milligrammes per stone of body weight. Its action is rapid, and similar to that of the watery extract. The same considerations apply to its intramuscular administration.<sup>(10)</sup> An oily suspension of "Tubarine" is now available, being useful for the more prolonged therapeutic applications; but it has no value in anaesthesia.

The foregoing indicates that, in terms of volume, "Tubarine" has about twice the potency of "Intocostrin". This distinction is important, in order to avoid the possibility of overdosage with the former. It is best always to estimate dosages on the basis of body weight and in terms of milligrammes or units, and to determine requisite volumes accordingly. Any confusion is now less likely, the pure solutions having virtually ousted the watery extract. They cost less and keep better.

#### Clinical Application.

Suitable premedication is essential, but it should be on a moderate basis. Since some means for the assistance of respiration is obligatory, any prospect of respiratory depression or arrest should not encourage undue caution in this regard. The administration of a barbiturate is advisable on the preceding evening, and an opium derivative *plus* atropine (or its equivalent) should be given one hour pre-operatively. For example, give "Nembutal" (three grains—0.19 gramme) and morphine (one-sixth grain—11 milligrammes) with atropine (one-hundredth grain—0.65 milligramme); or "Omnocon" (one-third grain—22 milligrammes) with scopolamine (one one-hundred-and-fiftieth grain—0.43 milligramme) may be used instead of morphine and atropine.

The actual conduct of anaesthesia involves a recourse to the principle of synergism. The idea is to use the anaesthetic agents to best advantage, while avoiding any excessive narcosis or toxic effects. Curare is then given at an appropriate time (or times) in order to improve relaxation. The concept of reducing the anaesthetic dosages to an absolute minimum is, however, absurd. This practice demands excessive administration of curare, with effects more deleterious than deeper anaesthesia would involve. In short, it is foolish to use curare unless it is really necessary, or to expect it to fulfil the major role.

Intraabdominal surgery, especially in the upper regions, is the chief indication. Curare is valuable when impaired liver function or generalized cachexia is present (for example, in hepatitis, thyrotoxicosis, *diabetes mellitus*, renal dysfunction, malignant disease *et cetera*). The margin of tolerance to volatile agents is then narrow. It is also useful for strongly built patients, and as an aid to the emergency control of obstructive or generalized muscular spasm. Curare is occasionally of value to

abolish trismus or to facilitate tracheal intubation. A combination of light narcosis, administration of curare and hyperventilation ("controlled respiration") is of great value in intrathoracic surgery, the object being the prolonged suppression of respiratory activity. Curare is absolutely contraindicated in *myasthenia gravis*, and when facilities are inadequate or the training of the user is insufficient.

There are two common methods of use, the choice being largely determined by the magnitude and duration of the operation. These are as follows: (a) the use of curare, with supplementary anaesthesia; (b) anaesthesia, with the supplementary use of curare.

The first method is suitable for short procedures—manipulations, brief dental extractions or tracheal intubation in the presence of trismus, oesophagoscopy, convulsive therapy *et cetera*. The dose of curare, on a basis of 1.5 milligrammes per stone, is sub-paralytic; respiration is thus usually not abolished. The amount of any supplementary anaesthetic, usually thiopentone, varies with the response to such preliminary doses of curare; it is generally small. Manual assistance to respiration may be required for a short period. Speedy recovery is common, since no cyclopropane or ether will be used.

The second method represents the common application. Anaesthesia is first induced to plane II, third stage (Guedel), with thiopentone and cyclopropane. Curare is then given, in the above-mentioned basal dosage, usually at the time the incision is made; it will thus provide good conditions for the initial exploration, packing *et cetera*. Meanwhile, more anaesthetic is given as indicated. Extra curare is not given unless the need is absolute; it is generally better to deepen the anaesthesia instead. If more curare is necessary, its use should be limited to the earlier stages of the operation in quantities not exceeding two-thirds of the initial dose.

The concurrent use of a gas machine is imperative, in order to aid depressed respiration, to prevent suboxygenation and hypercapnia, and to maintain the anaesthesia. An entirely closed circuit, with carbon dioxide absorption, is essential. Any neglect of these safeguards is most undesirable. When breathing is depressed, the inspiratory efforts should be aided by the synchronized compression of the rebreathing bag. It is important to release this pressure completely during the expiratory phase; this permits of the emptying of the lungs and favours the venous return of blood to the heart. If respiration is paralysed, a regular inflation at about 20 times per minute is necessary, followed by the resumption of synchronization when spontaneous efforts return.

The common warning against the use of ether with curare is largely invalid. Ether has a mild curariform action;<sup>(12)</sup> it delays impulse transmission at the neuromuscular synapses. Hence, if ether is added to the gaseous mixture from the outset the initial demand for curare is lessened; the calculated dosage should then be reduced by about one-third. Ether is of chief value, however, in the later stages of the operation, when it enhances the residual effect of any curare given earlier. Quite small amounts of ether will then maintain good relaxation, without ill-effects to the patient. Thus it is better to add ether for wound closure than to give more curare. With such supplementary ether apnoea may readily be sustained for as long as thirty or forty minutes. The "washing out" of carbon dioxide is a factor in this prolongation. Breathing is quickly resumed when the volatile agent is eliminated and when hyperventilation is stopped.

The usual signs of anaesthesia are largely abolished by curare. The pupils remain small with the eyeballs fixed, while the corneal reflex is generally absent. If oxygenation is adequate, any dilatation of the pupils and an increasing pulse rate suggest undue lightness of anaesthesia. Laryngeal stridor also indicates the need for more anaesthetic and not more curare. Although the ideal is a nice balance of anaesthesia and curare, any exact determination is virtually impossible. If the patient is relaxed, with a dry skin, a good colour and pulse, and no submental tugging, the position is satisfactory. Marked submental tugging, a sign of carbon dioxide excess, indicates the need for more vigorous assistance to

<sup>1</sup> This firm kindly provided supplies for the earlier clinical trials here.

breathing. The skilful maintenance of the respiratory exchanges is the essential; an absence of "signs" is then immaterial.

The accepted antidote to curare is "Prostigmin". It is indicated only when dosages are excessive and respiratory arrest is unduly prolonged. Gross overdosage is said not to respond to it.<sup>(10)</sup> The quantity required is from 0.25 to 0.5 milligramme, given intravenously. It should not be given as a routine measure after the use of curare. Ephedrine also has an antidotal effect (contrast *myasthenia gravis*<sup>(11)</sup>), the dosage is one-half to three-quarters of a grain (32 to 49 milligrammes), intramuscularly. It corrects the circulatory depression due to heavy dosage of curare or intercurrent shock.

Complications directly attributable to curare are rare, if dosages are moderate. Large dosages favour shock, from interference with vasomotor impulses. Surgical trauma during unduly light anaesthesia masked by heavy dosage of curare is also significant. Adequate oxygenation and the prevention of hypercapnia are most important safeguards.

Persistent narcosis, with circulatory depression, sometimes follows the injudicious use of curare. It is due to the delayed elimination of either volatile agents (respiratory depression) or intravenous agents (excessive dosages). Oxygen and ephedrine will hasten recovery. Judgement, experience and restraint are the best protective factors. Curare is sometimes blamed for post-operative ileus, but no rational connexion is evident. Indeed, the bowel is often contracted during the height of its action. The possibility of a reactionary dilatation exists, however; but the usual traumatic and toxic factors are probably responsible.

#### Conclusions.

1. Curare is a valuable adjuvant to general anaesthesia in selected cases and in competent hands.
2. Adequate respiratory support is imperative throughout the period of its action.
3. The addition of ether to the gaseous mixture greatly enhances and prolongs the effect of curare.
4. Proper facilities and training are essential to its safe and efficient use.
5. In general, deeper anaesthesia should be preferred to heavy dosage of curare.
6. The value of ephedrine for correcting certain deleterious effects should not be overlooked.

#### "Myanesin."

##### Identification.

"Myanesin" (British Drug Houses, Limited) is the trade-name for  $\alpha$ : $\beta$ -dihydroxy  $\gamma$ -(2-methylphenoxy) propane, a synthetic relaxing agent. It is available in ampoules of 10 millilitres, containing 1.0 gramme in 10% solution. An additional substance to promote solubility is also present. The preparation is miscible with water, and with saline, glucose and thiopentone solutions. It is unaffected by air, light, heat *et cetera*. It is also said to be bactericidal.

##### Pharmacology.

"Myanesin" will produce muscular relaxation and counteract strychnine convulsions in small animals. Unlike curare, it does not depress respiration in ordinary dosages. Hence good relaxation without respiratory embarrassment is possible following its use.

The mode and site of its action are uncertain. There is no interference with neuro-muscular impulse transmission. It may depress the spinal reflexes, so that muscular tone is impaired. Central impulses are unaffected; the breathing is thus undisturbed. An observed analgesic effect on the tongue<sup>(12)</sup> suggests an action on the peripheral sensory receptors rather than on the cord.

Its action is rather more sustained than that of a single dose of curare. The elimination is comparatively rapid and no toxic degradation products are formed. Experimentally no deleterious effects have been observed following its use; the hepatic and renal functions are unimpaired, and neither blood changes nor cardio-vascular disturbances are evident. The therapeutic margin is wide;

the minimum lethal dose in rabbits is said to be 610 milligrammes per kilogram of body weight.<sup>(13)</sup>

#### Clinical Applications.

The first clinical report on "Myanesin" was most enthusiastic.<sup>(14)</sup> Excellent results were obtained in 112 cases. This series covered a wide variety of major operations, the ages of the subjects ranging from three to eighty-six years. The relaxation obtained was good, and difficulties and complications were negligible. The dosages required were variable, the optimum range being between 10 and 27 milligrammes per kilogram. Thus a 70 kilogram (11 stone) patient might require from 0.7 to 1.89 grammes. Amounts up to 5 grammes, however, were safely tolerated in divided doses.

Supplementary thiopentone was frequently adequate for anaesthesia. Additional nitrous oxide and oxygen was sometimes necessary. Ether was rarely needed. A remarkable potentiating effect was evident; the demands for thiopentone or ether were much less than usual. Thus good relaxation was possible with very light anaesthesia. It was used without deleterious effects in severe *diabetes mellitus* and for Caesarean section. It was not helpful, however, as an aid to tracheal intubation.

The early impressions here were very favourable.<sup>1</sup> With comparatively light anaesthesia "Myanesin" in 1.0 gramme dosages provided good relaxation. Later, somewhat larger quantities were found necessary in more robust subjects, but a total of 2.0 grammes was never exceeded. The general practice was to give 1.0 to 1.5 grammes over a period of from three to five minutes, at about the time the first incision was made. The remainder was given later, if required. The combination with thiopentone was found useful; but the addition of cyclopropane or ether, in a vehicle of nitrous oxide and oxygen, was generally preferred. However, the thiopentone-"Myanesin"-open ether sequence was found to be very good in lower abdominal and pelvic surgery. Quite small quantities of ether then had pronounced effects, without undue respiratory depression.

The condition of most patients during and after operation was extraordinarily good. Thrombophlebitis, however, was disturbingly frequent, especially when a common vein was used for both "Myanesin" and thiopentone. Hence the published advice to mix their solutions was not adopted. Some improvement followed the use of separate veins for the injections. Less trouble was experienced with 5% solutions, but the position did not become really satisfactory until the strength was reduced to 2.5% or 2%. Technical difficulties were increased, however, by the larger volumes of solution involved.

Confidence was then badly shaken by a report of haemoglobinuria following the use of "Myanesin".<sup>(15)</sup> This covered three cases, in which other causes were excluded. Although no general ill-effects were observed the possibility of renal blockage was stressed. The authors concluded that "Myanesin", in its present form, was unsuitable for clinical use. A small series was therefore studied at Sydney Hospital. Specimens of urine were examined spectroscopically before and immediately after anaesthesia, and on the following day. Several controls gave negative results. Then two patients were given 1.8 and 2.0 grammes of "Myanesin" in 2.5% and 5% solutions respectively. Anaesthesia in one instance was by the use of thiopentone, ethyl chloride and ether, and in the other by ethyl chloride and ether. The first patient exhibited no complication, but the second developed intense haemoglobinuria and extensive thrombophlebitis. Subsequently solutions ranging in strength from 1.5% to 2.5% were given to several patients without significant ill-effects.

Thus "Myanesin" was apparently safe in weak solutions; but the difficulties of its administration were increased. These were reduced by the use of a drip method, employing 1.5% or 2% solutions. The drip was begun first, then anaesthesia was induced, usually with thiopentone given at a different site. Alternatively "Myanesin" was given into the tubing of an intravenous infusion, but adequate dilution was then less certain.

<sup>1</sup> The British Drug Houses (Australia, Proprietary), Limited, kindly made available liberal supplies for clinical trial here.



Then the report of a death following use of "Myanesin" appeared.<sup>(9)</sup> Appendicectomy was performed on a young woman weighing eight and a half stone, under anaesthesia with thiopentone, nitrous oxide and oxygen. Although the necessity for "Myanesin" was very dubious, a total of 2.8 grammes in 10% solution was given in divided doses. Shortly after the third dose a severe and prolonged fall of blood pressure occurred. Apparently no vasopressor restorative was employed. Death from uraemia occurred six days after the operation. The autopsy showed a partial necrosis of the renal cortex, with pigmented debris in the tubules. However, there was no definite evidence of intravascular haemolysis. The conclusion was that a prolonged state of vascular hypotension during the operation had caused irreversible renal damage.

Regardless of any possible error in judgement or technique, the outcome in this case is sufficient to arouse grave doubts about the general employment of this drug in anaesthesia. Further study is justified, however, under suitable conditions; it would be unfortunate if so promising a novelty had to be discarded entirely.

Recently an opportunity arose to try "Myanesin" in the treatment of tetanus. Despite the foregoing adverse reports, its use was considered to be justified, as the patient was virtually moribund. When first examined she was under deep barbiturate narcosis. Pronounced trismus and opisthotonus were present. There was much distress from accumulation of mucus in the pharynx. Attempts to clear this caused severe spasms. The use of curare was considered, but "Myanesin" was chosen since respiratory depression was an unlikely concomitant. An earlier report, previously overlooked, now confirms this decision.<sup>(10)</sup>

A slow intravenous infusion was therefore begun, comprising "Myanesin" (0.5%), glucose solution (4%) and sodium chloride solution (0.17%). The first 200 millilitres (equivalent to 1.0 gramme) were given rapidly, and then the rate of drip was adjusted so as to deliver about 0.5 gramme per hour. The convulsions ceased and tonus was much reduced. The patient recovered consciousness; she tolerated the insertion and frequent changes of an artificial airway for the clearance of the pharynx. The colour and pulse improved, and the breathing became free. This improvement was maintained over the next forty-eight hours.

Various difficulties then caused repeated interruptions of the therapy. Each resumption, however, produced a definite improvement. A fear of pulmonary oedema, and the discovery of numerous red blood cells and granular casts in the urine finally determined the cessation of the treatment. In all 34 grammes were given over a period of about sixty-eight hours. The patient now grew worse rapidly; tonus increased and convulsions recurred. She died after two violent convulsive seizures on the following day.<sup>1</sup>

The benefit of "Myanesin" in this case seems evident. Whether it was responsible or not for any renal damage is uncertain. Perhaps a combination with "Avertin" might have given better results. Its further study in similar cases seems warranted.

#### Conclusions.

1. Good relaxation is provided by the judicious combination of "Myanesin" and general anaesthesia.
2. Certain adverse reactions, however, demand its withdrawal from general use at the present time.
3. Nevertheless, further experimental and clinical studies by qualified persons are justified.
4. The 10% solution provided should be diluted to 2% or less before its clinical use is undertaken.
5. A dosage limit of 2.0 grammes should not be exceeded during any one period of anaesthesia.
6. Its possibilities in the treatment of tetanus deserve further investigation.

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## Reports of Cases.

### CHONDROBLASTIC OSTEOGENIC SARCOMA OF THE HUMERUS.

By JOHN MAYO,

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THE choice of the best treatment for an osteogenic sarcoma is a considerable problem. Much has been written on the subject and various opinions have been expressed. With the hope of adding even slightly to the knowledge of this difficult matter, one case is herewith reported.

#### Clinical Record.

The patient, a young woman, aged twenty-one years, was first examined at the Royal Adelaide Hospital early in March, 1945. She gave a history of pain above the right elbow, which had persisted for three months. Six weeks after the pain began a swelling appeared on the back of the arm just above the joint. No history of injury was recorded, and no significant personal or family history was elicited.

On examination of the patient, a diffuse, hard swelling was found on the dorsum of the right arm over the lower end of the humerus. It was slightly tender on pressure. Movement of the joint was not limited. A small palpable gland in the axilla had probably nothing to do with the condition. A radiological report was as follows:

Right elbow. Bony proliferation in the lower part of the shaft of the humerus with surrounding tumour suggestive of osteogenic sarcoma.

Further skiagrams were taken, and the tumour appeared to be limited to the lower part of the humerus. An enlarged hilar shadow shown in the right lung raised the question of metastatic deposit, but subsequent skiagrams and the progress of the patient made this unlikely.

The patient appeared before the consultative committee, and at the suggestion of one or more members it was decided to try the effect of massive X radiation, ignoring



the damage that might accrue to the soft tissues, with the intention of ultimately disarticulating the limb at the shoulder joint.

Treatment was begun on March 14, 1945, and the whole of the upper part of the arm was irradiated through two pairs of fields diametrically opposed. The anterior, posterior and lateral fields measured 30.0 by 7.0 centimetres, the medial field 24.0 by 7.0 centimetres. The other factors were 185 kilovolts, a Thoraeus filter equal to one millimetre of copper at that voltage, half-value layer of 1.3 millimetres of copper, and 50.0 centimetres' target skin distance. Treatment was completed on April 26, forty-three days later. The dose to each field was 3700r and the central dose 10,000r. "Stovaine" ointment was applied to the skin during the later stages. As might have been expected, there was a brisk reaction, and in spite of care some overlap had occurred, with resultant areas of considerable epidermolysis.

Radiological examination four weeks later showed better definition of the margins of the tumour, and the radiologist suggested that this might indicate an attempt at limitation of the growth.

The skin healed, and the patient was returned to Mr. I. B. Jose, who, as there were no signs of pulmonary or other deposit, disarticulated the limb at the shoulder joint on June 28.

The histological examination of the tumour was made by Dr. J. B. Thiersch after the arm had been amputated. He reported that the tumour was a chondroblastic osteogenic sarcoma with evidence of calcification, and that there was a pronounced irradiation effect on the tumour.

The patient became pregnant a week or two before the operation, and a healthy infant was born in March, 1946.

Since then she has shown no evidence of recurrence of the growth. It is fully three years since the first appearance of symptoms; but her general condition is excellent, she has gained in weight and looks well, and repeated skiagrams of her chest have failed to reveal any metastasis.

Sufficient time has not yet elapsed to form an opinion as to the future prognosis. However, the period of life and apparent health is already greater than is usual for tumours of this nature.

#### Comment.

The committee is under no illusion that such a method of treatment is likely to be uniformly or even frequently successful. To present a true picture, it should be stated that two patients have since been treated on similar lines. One was a girl, aged ten years, with what was pronounced by the pathologists to be a fibrosarcoma which involved most of the shaft of the tibia, probably of neurogenic origin and highly malignant. The patient had a subsequent amputation, and appeared to be well without recurrence over a year after treatment. The third patient was an elderly man with osteogenic sarcoma of the upper end of the femur superimposed on Paget's disease. When the limb was amputated after X-ray therapy, malignant thrombi were found in the veins. He now has pulmonary metastases. As an example of earlier treatment, a girl, aged fourteen years, with a chondroblastic sarcoma of the lower end of the femur, was treated in 1942 with a central dose of 3000r and subsequent amputation. She was dead of pulmonary metastases within two years.

#### Discussion.

The mode of treatment was suggested by an article in *Radiology* by Robert F. McNattin.<sup>(1)</sup> This author quoted Ferguson<sup>(2)</sup> as stating that a review of 400 cases in the Registry of Bone Sarcoma of the American College of Surgeons showed that early surgery gave the poorest results. As against this, Higinbotham and Coley<sup>(3)</sup> stated earlier that irradiation alone gave the poorest results; but they agreed that irradiation plus radical surgery gave the best results, although only slightly better than those of surgery alone. They favoured pre-operative irradiation in most cases.

McNattin recorded a series of eight patients, six of whom had massive X radiation and amputation. Of these, five

had been well at the time when the report was written, for periods varying from sixteen months to seven years, while one was objectively well, but had a slowly growing pulmonary metastasis nearly five years after treatment was begun. The other two patients were treated with X-ray therapy only, and were well without sign of recurrence three years and two years respectively after the beginning of treatment.

McNattin used a pretracted treatment, varying from 60 to 140 applications. Amputation was performed at the first sign of necrosis.

This long protraction was not adopted in the case here reported, the whole dosage being administered in 28 treatments.

In my experience, I have seen very few cases of osteogenic sarcoma successfully dealt with by immediate amputation or by irradiation in the doses usually employed. I was therefore glad to attempt a different method of attack. The success in this case remains problematical; but at the least it is a partial success.

Geschickter<sup>(4)</sup> describes chondroblastic sarcoma as a form of osteolytic osteogenic sarcoma arising from an epiphyseal line, with easy identification of the proliferating cells as chondroblasts similar in type to those in the skeleton of the embryo. He states that it is a rare tumour and highly malignant, the majority of patients being aged between ten and twenty years and most between fourteen and nineteen years. The sites affected are chiefly the lower end of the femur, the upper end of the tibia, the upper end of the humerus and occasionally the lower end of the radius. Geschickter gives no instance in which the lower end of the humerus was affected. He contends that the tumour is histogenetically distinct from the other forms of osteogenic sarcoma, and that it always begins from a proliferation of cartilage at the epiphyseal line and in part blots out this line.

As ossification of the lower end of the humerus is usually complete before the age of twenty-one years (eighteen years being the age given as a rule), one can only imagine that in this case the site of origin was perhaps a cartilaginous rest.

Again according to Geschickter, although reactive new bone may be present at the periosteal margins, true ossification does not occur in this tumour or in its metastases. It does not proceed beyond calcification.

The duration of symptoms is stated to be less than five months in patients aged under twenty years, whereas in the rare cases occurring in patients aged over thirty years it averages three years.

Geschickter gives the typical history of a case as being like that of most sarcomata of bone—the occurrence of trauma, pain, tenderness and tumour in that order, followed by rapid growth and dissemination.

In the case reported here there was no history of trauma; but pain was noted first, then tumour with some tenderness. The duration of symptoms before the patient reported was three months.

It must be admitted that Borst, Codman, Ewing and Kolodny have not described or differentiated such a tumour. However, Geschickter holds that these authors have described such growths as endotheliomata, as metastasizing giant-cell tumours and as epiphyseal chondromatous giant-cell tumours.

Jacobson<sup>(5)</sup> agrees that in this tumour it is the cartilage cells themselves that are the active agents in the neoplasia, and considers that the myxoid stroma is due to the dedifferentiation of the malignant cartilage cells. He points out that these tumours should not be confused with the osteogenic sarcomata of the chondroplastic type arising in the periosteum, in which the spindle cells are the active element and the cartilage is the product.

The question is often asked: "Why irradiate if it is proposed to amputate?" The answers to this, I think, are as follows: (i) in the hope of reducing the viability of the tumour cells and lessening the risk of dissemination; (ii) because of the poor results of immediate amputation and the somewhat more hopeful results with irradiation.

But I am convinced that normal dosage is rarely successful in these cases, and the radiation attack must be waged more fiercely. If the situation of the growth precludes subsequent amputation, McNattin's protracted treatment should be well worth a trial.

Ewing<sup>(6)</sup> makes the following statement:

It seems to me doubtful if the short period required for preliminary radiation and the therapeutic test definitely increases the danger of metastases, while it is certain that such radiation largely devitalizes many of the tumours and favours a successful amputation when this becomes necessary.

Kolodny<sup>(7)</sup> is of the same opinion, as the following quotation shows:

Even now clinicians are inclined to think that if a bone sarcoma is operable there is an indication for surgical treatment without losing time in radiation, while for radiation only the inoperable cases are to be left. That this view is obsolete and not in accord with the disappointing results in radical surgical treatment is obvious.

Even as early as 1913 Pearce Gould<sup>(8)</sup> treated by means of the interstitial implantation of radium and amputation a girl, aged sixteen years, who had a sarcoma of the lower end of the femur. It is interesting to note that a description of the section suggests that the tumour may have been a chondroblastic sarcoma. She was well without sign of recurrence seventeen years later.

There is one last point. As the periosteum is the most effective tissue in delaying the local spread of the disease, I do not consider even an aspiration biopsy justifiable while this membrane is intact. Such a procedure should be delayed until irradiation has been administered.

#### Acknowledgement.

My thanks are due to Mr. I. B. Jose for permission to publish this case.

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## Reviews.

### MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS.

"THE ESSENTIALS OF MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS" (fourth edition) by R. H. Micks is a pleasure to review, in that it creates the impression that one is listening to an able clinician at his best rather than merely reading a textbook.<sup>1</sup>

The author's propositions for the therapeutic application of each drug or group of drugs are essentially practical rather than academic, and develop as a logical sequence to his lucid exposition of the principles which govern the actions of the drugs presented.

In a new chapter on narcotic action, Geudel's standard classification of the stages of anaesthesia is adopted and combined with a comparable classification based on the

terms defined by the Brain Injuries Committee of the Medical Research Council. Expressed in accurate and accepted terms, this composite presentation of narcosis produced by widely separated causes emphasizes the essential identity of progressive stages of disintegration of reflex activity of the central nervous system, whether these are induced by drug, injury or disease.

In a revised article on narcotic poisoning it is maintained that analeptics should not be administered until artificial respiration has been successfully started and its maintenance assured—the view being expressed that analeptics without artificial respiration are useless, and in case of extreme depression accompanied by respiratory failure, may be dangerous.

A chapter on drugs used in diseases of the heart is a model of direct thinking expressed in simple diction. A summary of the therapeutics of congestive heart failure merits quotation:

Rest. Be prepared to give morphine often; give a cautious dose at once in dyspnoic heart failure. Be prepared to use digitalis often, but know when it is likely to do harm, and when it should be given with caution. Be prepared to use mercurial diuretics often. Do not miss the diagnosis of hyperthyroidism. Be prepared to recognize and aspirate effusions into the serous cavities.

In addition to discussing details of the indications for these therapeutic measures, the author deals intimately and concisely with prescribing and pharmaceutical essentials for their practical application. In this latter aspect, which is a characteristic and most commendable feature of the book, Dr. Micks obviously draws on a wide clinical experience which is generously and explicitly given to his readers.

An article on the thioracils introduces a review of the many medical problems encountered in the treatment of hyperthyroidism, and the subject of agranulocytosis, so common as a complication of thioracil therapy, is amply discussed.

Among other new and useful drugs which are included for the first time are "Benadryl", folic acid, "Diodoquin" and the new antimalarials, "Paludrine", "Chloroquine" and pentaquine.

Much common sense is packed into a short chapter on prescribing. With the present availability of so many potent therapeutic agents, the exhortation to avoid blind therapy in undiagnosed non-urgent illnesses is timely. No less sound is the advice to prescribe active and powerful drugs by themselves, and particularly to avoid the use of such in mixtures, "unless you are quite sure that the drug will not deteriorate in watery solution or react with one of the other ingredients".

The young practitioner embarking on the responsibilities of medical practice is fortunate in having the opportunity to consult with such a sane and practical guide as Dr. Micks through the medium of this essentially clinical presentation of *materia medica*, pharmacology and therapeutics.

### SYNOPSIS OF NEUROPSYCHIATRY.

THE second edition of the "Synopsis of Neuropsychiatry" by L. S. Selling is a comprehensive survey of neurology and psychiatry, including many recent advances.<sup>1</sup>

The first 320 pages deal with neurology and the subject matter is covered fully and clearly, in fact, in a much more comprehensive and connected manner than many synopses.

The nervous system is divided into sections beginning with the basic nervous structure and peripheral nerves. Then the spinal cord, brain stem, cranial nerves, cerebellum, cerebrum, meninges, autonomic and sympathetic nervous systems, symbolic disorders, convulsive states and muscular syndromes are dealt with in turn. The anatomy and physiology of each part are outlined, and then the disorders and diseases of these parts are discussed, followed by prognosis, treatment and medico-legal significance.

Part II consists of 200 pages dealing with psychiatry. It covers a wide field of psychological medicine and psychopathology and commences with an outline of the basic principles of psychology, including mental mechanisms, psychoanalytical concepts and individual psychology. Then follow a section on the general aetiology of mental disease

<sup>1</sup>"The Essentials of Materia Medica, Pharmacology and Therapeutics", by R. H. Micks, M.D. (Dublin), F.R.C.P.I.; Fourth Edition; 1947. London: J. and A. Churchill, Limited. 8" x 5½", pp. 410. Price: 18s.

<sup>1</sup>"Synopsis of Neuropsychiatry", by Lowell S. Selling, M.D.; Ph.D., Dr.P.H., F.A.C.P.; Second Edition, 1947. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7½" x 4½", pp. 562, with illustrations. Price: 49s.



and an enumeration of the symptoms of mental disorders. The remaining chapters deal with psychiatric therapies, neurosyphilis, alcoholism and drug addiction, the psychoses and psychoneurosis, psychosomatic medicine, psychopathic personality, and behaviour disorders of childhood. The book concludes with a good bibliography.

The author has managed to get a considerable amount of material into a confined space; his description of the symptoms of mental disease and the outline of psychopathology are quite adequate and not too confusing. This latter must have been a difficult task because of the large amount of literature which has been produced by the various schools. Professor Selling attempts to adopt the eclectic attitude, but he seems to quote more frequently from the Freudians. The arrangement of the material is well done, and the style is concise, but not so abbreviated that it makes staccato statements.

The book is recommended for both the student and the general practitioner for reference and revision, and would not be out of place in the library of the specialist in neuropsychiatry.

#### HEALTH EDUCATION.

"BASIC FACTS OF HEALTH EDUCATION" is comprised of a series of unrelated articles upon all sorts of topics.<sup>1</sup> These were originally published in British Ministry of Health Bulletins and reprinted in *The Pharmaceutical Journal*, and now they are again reprinted in book form by The Pharmaceutical Press. As the title implies, the facts given are certainly only "basic" and it is difficult to see just what part this type of book can play in health education when there are so many which give a complete picture of the subject. Some of the topics dealt with include positive health, *tinea pedis*, running ears, dust in the home and factory, modern views on gonorrhoea and geriatrics, to mention just a few; however, from these it can be readily seen that they are an unrelated series. There are just as many subjects omitted, which are just as important as those included, if not more so; it is therefore not possible to recommend this book to readers whose problems are concerned with public health and health education. Each brief article may have read well when published individually, but to make such a book worth while a much more complete survey of the subject would be necessary.

#### COMMUNICABLE DISEASES.

THE second edition of "Handbook of Communicable Diseases" by Franklin H. Top and collaborators is a welcome addition to the rather limited literature in this particular branch of medicine.<sup>2</sup> The author is the medical director of the Herman Kiefer Hospital in Detroit. In the preface to the first edition the author states: "The book is primarily the outgrowth of the clinical experience of the author and his predecessor, Dr. John E. Gordon, now professor of preventive medicine and epidemiology at Harvard University." The book contains material obviously based on a sound clinical background, and in its compilation there is evidence of much thought and work. It is beautifully illustrated, and some of the colour photographs of the exanthemata are gems. At the end of each chapter there is a complete list of references and items for suggested reading. For this alone the book is worth a place in any medical library.

Published in 1947, this edition is surprisingly up to date. At the same time one can appreciate the difficulties of an author in these times of change and new discoveries. For example, the "common" complications of meningococcal meningitis are given in full, but with the addition "under present methods of treatment with chemo-therapeutic agents, all complications heretofore prevalent are infrequently noted".

An interesting indication of the successful use of immunization against diphtheria in the United States is

given by the brevity of the chapter on diphtheria in comparison, for example, with the space devoted to pneumococcal pneumonia. Unfortunately the result is that, for students of infectious diseases, a better description of the management of diphtheria may be found in English or Australian text-books.

It is pleasing to note in the section on "Serum and Serum Reactions" the advocacy of the lateral aspect of the thigh as the best site for intramuscular injections. Also to be commended is the warning given for caution in the administration of serum intravenously. "In some instances even a negative skin test may not indicate serum sensitivity when serum is to be given by the intravenous route."

The illustrations depicting the scarlet fever complications, septic scarlet fever, suppurative cervical adenitis and nephritis are most instructive. One cannot say the same of the colour photograph of a scarlet rash, a difficult subject to reproduce satisfactorily.

As would be expected, the chapter on poliomyelitis is one of the most interesting. Very wisely no attempt is made to elucidate the difficult and complicated problems of the epidemiology of this disease. Considerable space is given to the discussion of "The Kenny Concept of Poliomyelitis". The statement is made that "the concept is found, on our present knowledge of the disease, to be somewhat lacking in validity". Praise, however, is given to the Kenny method of treatment, and the author is an advocate for the use of hot packs in the early stages of severe paralysis. In addition the dogmatic statement is made that immobilization has largely been eliminated from the treatment of poliomyelitis. Wisely, however, in a concluding paragraph, the author advises caution in evaluating any method of treatment, particularly for poliomyelitis.

The appendix contains a number of tables culled from the records of the Herman Kiefer Hospital during the period 1927-1936. An apology is made for the fact that it was not possible to include the ten-year period 1937-1946, because the manuscript for the second edition was completed before the period ended. While these tables are of interest to fever hospital staffs, their clinical value has largely deteriorated, and one would question the advisability of their retention in the present edition.

#### Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"The Practice of Industrial Medicine", by T. A. Lloyd Davies, M.D. (London), M.R.C.P. (London), with a chapter on the Hazards of Coal Mining by G. F. Keatinge, M.D. (Dublin), D.I.H.; 1948. London: J. and A. Churchill, Limited. 8 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ ", pp. 252. Price: 15s.

The author has attempted "to fill the present serious gap in the education of the medical student and nurse, and to help the practitioner undertaking the work of an industrial medical officer for the first time".

"Synopsis of Pediatrics", by John Zahorsky, A.B., M.D., F.A.C.P., assisted by T. S. Zahorsky, B.S., M.D.; Fifth Edition; 1948. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 7 $\frac{1}{2}$ " x 5", pp. 450, with many illustrations, some of them coloured. Price: 41s.

A short account of pediatrics in all its aspects, intended for the general practitioner.

"The Treatment of Malignant Disease by Radium and X-Rays being a Practice of Radiotherapy", by Ralston Paterson, M.C., M.D., F.R.C.S.E., D.M.R.E., F.F.R.; 1948. London: Edward Arnold and Company. 9 $\frac{1}{2}$ " x 7", pp. 644, with many illustrations. Price: 45s.

A statement of the principles and practice of the Radium Institute in Manchester.

"Neuroanatomy", by Fred A. Mettler, A.M., M.D., Ph.D.; Second Edition; 1948. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 10" x 7", pp. 536, with many illustrations, some of them coloured. Price: 75s.

A book intended for the medical student beginning the study of neuroanatomy and to prepare him for his later clinical training.

"Recent Advances in Cardiology", by Terence East, M.A., D.M., F.R.C.P., and Curtis Bain, M.C., D.M., F.R.C.P.; Fourth Edition; 1948. London: J. and A. Churchill, Limited. 8" x 5 $\frac{1}{2}$ ", pp. 464, with many illustrations. Price: 24s.

In this volume the authors record recent information on cardiology; they have in mind the general practitioner and the student preparing for higher examinations.

<sup>1</sup> "Basic Facts of Health Education: For Members of the Medical, Pharmaceutical and Nursing Professions", selected articles from the Ministry of Health Bulletins which have appeared in *The Pharmaceutical Journal*, 1944-1947; 1948. London: The Pharmaceutical Press. 8 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ ", pp. 200. Price: 7s. 6d.

<sup>2</sup> "Communicable Diseases", by Franklin H. Top, A.B., M.D., M.P.H., F.A.C.P., and Collaborators; Second Edition; 1947. St. Louis: The C. V. Mosby Company. Melbourne: W. Ramsay (Surgical) Proprietary, Limited. 8 $\frac{1}{2}$ " x 5 $\frac{1}{2}$ ", pp. 992, with many illustrations, most of them coloured. Price: 71s.



# The Medical Journal of Australia

SATURDAY, AUGUST 7, 1948.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

## AN ENGLISH REPORT ON THE REMUNERATION OF CONSULTANTS AND SPECIALISTS.

EVER since the report of the Inter-Departmental Committee on the Remuneration of General Practitioners (commonly known as the Spens Report, after the chairman of the committee, Sir Will Spens) was issued in 1946, a report on the remuneration of consultants and specialists has been anxiously awaited by members of the medical profession in Great Britain. The 1946 report was discussed in these pages in the issue of June 8, 1946. The report on consultants and specialists has now appeared.<sup>1</sup> While this document will be of immediate importance to consultants and specialists in Great Britain, it merits the attention of Australian practitioners for several reasons. One of these is the fact that it deals with the training period and the career of consultants and specialists; another is that it also deals, as its title suggests, with the amount of payment that should be made to these persons in "any publicly organized hospital and specialist service". In England this service is now in being. Seldom in Australia is it easy for a medical practitioner to acquire training and experience as a specialist unless he has the financial reserves that will tide him over a lean period. Nowhere in Australia is the status of specialist officially recognized, with the exception of Queensland. But the Medical Board in Queensland has long ago given up attempts to regulate the admission of practitioners to the register of specialists under *The Medical Acts, 1939 to 1940*, for the simple reason that the presiding judge has failed to distinguish between general competence on the one hand and special knowledge, skill and experience on the other. The attitude of some Australian practitioners to the salaries that should be offered to medical graduates for whole-time service is curious. It is displayed from time to time in connexion with advertisements that are offered for publication in this journal. For many years it has been the custom for the Editor of this journal to refuse to publish an advertise-

ment if the remuneration offered is regarded as inadequate. In this matter guidance is obtained from one or two statements on salaries emanating from the Federal Council; in one or two spheres a Branch council has carried out a special investigation and made certain recommendations. Common consent is given to the view that salaries should be adequate, but the general principle is apt to be lost sight of because of consideration of a proposed salary in comparison with others that are accepted by appointees or have been accepted in the past—what is fitting and proper in relation to present-day conditions, to the scarcity of really first-class candidates, and sometimes to what must be regarded in certain spheres as Australia's relative isolation, is set aside. It has even been suggested that to insist on a first-class salary for a first-class man may make the man think more of his salary than of the work he has to do. It would not be difficult to think of further reasons why study of this second Spens Report by Australian authorities and individuals should be salutary.

The Inter-Departmental Committee, which consisted of eleven persons, only five of whom had medical qualifications, quotes at the outset its terms of reference as follows:

To consider, after obtaining whatever information and evidence we thought fit, what ought to be the range of total professional remuneration of registered medical practitioners engaged in the different branches of consultant or specialist practice in any publicly organised hospital and specialist service; to consider this with due regard to what have been the financial expectations of consultant and specialist practice in the past, to the financial expectations in other branches of medical practice, to the necessary post-graduate training and qualifications required and to the desirability of maintaining the proper social and economic status of specialist practice and its power to attract a suitable type of recruit, having regard to other forms of medical practice; and to make recommendations.

While the members of the committee were able to take into account post-war conditions as they affected the development of medicine, particularly in regard to the newer specialties and to modifications in the organization of hospital services, they found it impossible to judge post-war financial conditions, and therefore their recommendations are framed in terms of the 1939 value of money. The committee wishes to emphasize "as strongly as possible" that adjustments made to present-day values of money should have direct regard not only to estimates of the change in the value of money, but to the increases which have in fact taken place since 1939 in incomes both in the medical and in other professions. In a first attempt to define the terms "consultant" and "specialist" the committee was disposed to refer to those medical practitioners who after completion of a series of hospital appointments and attainment of a higher qualification are appointed to membership of the staff of a hospital. However, when conditions of service and remuneration during training were considered, it was decided to include in the term specialist the whole group of practitioners who after registration and completion of junior house appointments are appointed to hospital posts in training for a special branch of medicine. Having made this statement, the committee proceeds to describe the career of a specialist as it has been up to the present time, and then it sets out what conditions in its opinion should prevail in the future. Heretofore after graduation a practitioner may have held one or more house appointments. While holding these appointments he will have undertaken intensive academic

<sup>1</sup>Report of the Inter-Departmental Committee on the Remuneration of Consultants and Specialists; Ministry of Health and Department of Health for Scotland; 1948. London: His Majesty's Stationery Office. 9½" x 6", pp. 30. Price: 6d. net.

study with a view to securing a higher qualification in medicine or surgery and also with the aim of obtaining, at approximately four years from registration, appointment to the most senior training posts, for which a higher qualification is normally a requisite. These posts are known as those of registrar, senior registrar or first assistant. A practitioner holding one of these posts has no direct charge of patients, but is responsible to his chief for the care of patients during the latter's absence. As he gains experience he is given more and more responsibility. On the completion of his tenure of this post the practitioner is ready for appointment to the staff of a hospital, when he will be recognized as having full specialist status. The members of the committee have been particularly impressed by the drastic selection to which specialists in the early part of their career are subjected. They do not seem to be impressed by the present-day financial conditions which have to be faced by the young specialist. They point out, *inter alia*, that before the war hospital registrars received £300 to £400 a year or less, even in non-resident posts. They also seem concerned at the well-known fact that in the early days of his hospital appointment a young specialist is seldom able to earn enough from private practice to meet his overhead expenses, and has often to be dependent to a considerable extent upon private means or outside work.

The recommendations of the committee would obviate the present difficulties of the young specialist. We propose to set out a bare outline of the proposals and to remind readers that they are made for English conditions in terms of the 1939 value of money, and that they cover every type of specialty. The suggestions start with salaries for posts obtained normally not less than one year after registration and held normally for one year only. For this first type of position (non-resident) a fixed salary of £600 *per annum* is suggested. For hospital posts normally obtained not less than two years after registration and normally held for two years (assistant, junior registrar, *et cetera*) the salary recommended is £700, rising by one annual increment of £100 to £800. For posts normally obtained not less than four years after registration and normally held for three years (first assistant, senior registrar, *et cetera*) the salary suggested is £900, rising by two annual increments of £100 to £1100 *per annum*. If such a post is held for more than three years one further increment of £100 is thought suitable. (These are non-resident posts.) A specialist appointed to the staff of a hospital at the age of thirty years or below should, it is thought, receive a starting salary of £1250. A specialist appointed at the age of thirty-one years should receive £1375 a year, and a specialist appointed at thirty-two years of age should receive a starting salary of £1500. Further, the initial salary of a specialist on the staff of a hospital should be augmented by an additional £125 after each year of service, until a salary of £2500 has been reached. The committee thinks that there should be an equality of status between the various specialties and between hospitals. In addition to all this, it is held that a special committee should be set up to confer distinction awards in three grades on selected persons in recognition of special contributions to medicine, exceptional ability or outstanding professional work other than administration. The highest grade should carry an award of £2500 *per*

*annum* in addition to the salary of £2500. Distinction in the second grade would carry an award of £1500 and in the third grade an award of £500 *per annum*. It is thought that 4% of all specialists should be eligible for the first distinction, 10% for the second and 20% for the third. A retiring age of sixty-five years is thought suitable. Another opinion stated is that in order to secure the right men for teaching purposes, clinical specialists engaged in teaching should receive increased total remuneration.

The details of this report should receive the careful attention of all who at present have to do with the appointment of medical graduates to full-time service in Australia. In view of what the future may hold in the way of proposals to extend the range of full-time service, detailed consideration by Branch councils will also be wise.

## Current Comment.

### THE IMMUNIZATION PROCEDURES OF TODAY.

As the subject is of great interest and practical importance to all members of the profession, frequent references are made in these columns to both the theory and the practice of immunization. A symposium has recently appeared<sup>1</sup> which sums up the current status of immunization procedures, and though it is presented primarily from the point of view of the public health officer its interest is much wider. In a paper on the practical aspects of immunization programmes, Franklin H. Top points out that there is some difference in the attitude towards protective measures as between the health officer and the private practitioner; it is the difference between what is desirable for the group or community in general and what will best serve an individual under particular conditions. The difference in point of view is, however, reconcilable, for the ultimate goal in both instances is satisfactory protection against disease, whether the unit is an individual or a community. The important thing is that each should understand the other's point of view and that each should fulfil his own task without being critical of the other's different attitude which is related to a different immediate object. As one type of example we may take the attitude of the Health Department in the face of a threatened outbreak of smallpox in New York in April, 1947, as related by R. S. Muckenfuss. Mass vaccination was undertaken and more than six million vaccinations were performed. From the number of primary or accelerated reactions it was evident that the susceptible population was sufficient to make a major epidemic possible. To cope with the enormous number of vaccinations in a very short time heroic measures were necessary. Vaccine was distributed in one-millilitre vials, sufficient for 50 or more vaccinations, each vial being accompanied by 50 sterilized toothpicks for use as applicators and 50 sterilized needles. Generalized vaccinia occurred, 36 cases being reported to the Health Department; 22 of the subjects were children who had not themselves been vaccinated, but who acquired vaccinia by contact from other members of the family. Two of the children died. Forty-two cases of post-vaccinal encephalitis occurred, an incidence of approximately one per 150,000; eight deaths from this cause were reported, but the diagnosis was not proved. The verdict of Muckenfuss is that the rate of occurrence of unavoidable complications was so low as to constitute a negligible danger in comparison with the danger of a major smallpox epidemic—a justifiable opinion, but essentially that of the public health officer.

A completely different situation is seen in relation to pertussis. The reliability of immunization measures has, in the past at least, been uncertain, and public health

<sup>1</sup> *American Journal of Public Health and The Nation's Health*, April, 1948.



officers have been reluctant to undertake or to recommend their use on a community-wide basis. Indeed the view has been held in this country that to undertake a campaign for immunization against pertussis parallel to that against diphtheria might have undesirable repercussions on the latter; a degree of success against pertussis that was only moderate would be likely to lower the general confidence in immunization procedures and break down the hardly won prestige now enjoyed by diphtheria immunization. The family practitioner, on the other hand, faced with the high mortality attending pertussis in infants and able to present the immunization measures on their merits to the individual parent, is in quite a different position and may well press the claims of immunization. Incidentally, Joseph A. Bell in another paper of the symposium expresses his belief that there is sufficient evidence at hand to warrant consideration by public health officers of pertussis vaccine for routine general use, though he is careful to make it clear that public health officers need to set a standard of reliability in the choice of a vaccine higher than that necessarily required by the private practitioner. It is to be hoped that it will soon be considered practicable to attack this baby-killer as widely and effectively as has been done with diphtheria.

The extensive data accumulated by the army of the United States form the background for a discussion by Rufus L. Holt on typhoid fever immunization. The circumstances of a large army in the field require mass immunization, and the results have justified this in the form of both a lowered incidence rate and a lowered mortality rate; moreover, Holt expresses a firm conviction that a proportionate reduction in the carrier rate has also occurred. In the civil community, of course, the public health officer is most unlikely to be concerned with immunization against typhoid fever; for selected individuals exposed to risk of infection immunization is most desirable.

Immunization against tetanus provides an example of mass immunization with a preparation whose value had not yet been proved. The indication for protective measures for servicemen was, however, so strong and tetanus toxoid appeared so promising that the experiment was undertaken. The phenomenal success of the procedure is now, of course, past history. Arthur P. Long quotes Boyd's conclusion that incidence of tetanus among British forces in African and European campaigns was negligible, and states that in the United States army but twelve cases of tetanus are known to have occurred during the period 1942 to 1945. Only one of these developed among the approximately one-half million troops reported to have been wounded. Of the twelve cases, six were in individuals with no active immunization, two in soldiers who had been basically immunized but had received no toxoid after injury, and four in those whose records indicated that they had received all required injections. The incidence of tetanus among non-immunized individuals in the Japanese and German forces and among civilians wounded in Manila provided adequate control information to confirm the efficacy of the toxoid. Tetanus hardly presents a public health problem in civil life, but it is a risk to which every individual is exposed, the hazard being greatest in certain occupations and among children up to the age of fifteen years. For these, at least, active immunization with tetanus toxoid seems to be warranted. Long refers to several other diseases. Vaccination against epidemic typhus fever is considered desirable for those who are to travel or reside in east or south-east Europe, Asia, Japan and possibly certain sections of Central and South America; the vaccine does not protect against endemic or murine typhus for which a separate protective vaccine is now available. Vaccination against cholera is considered desirable for those in areas where cholera is frequently encountered, but experience in the American Army helped little in evaluation of the procedure. The value of vaccination against plague is still not clear. The effectiveness of vaccination against yellow fever is stated to have been clearly demonstrated; vaccination, which is required for those travelling to or through the limited areas of South America and Africa where the disease occurs, is considered officially to be valid for four years.

No clear evaluation has yet been made of vaccination against Japanese encephalitis.

Finally it may be as well to look again to the paper by Top for a summary of the criteria helpful in assessing the ultimate worth of a vaccine: safety, an obviously important consideration which needs, nevertheless, to be weighed against the potential danger of the disease to the individual and/or the community; effectiveness, which is as important as safety, but more difficult to determine; usefulness, which assumes greatest importance in determining the use or otherwise of measures to combat mild infectious diseases; ease of administration, which interests the private practitioner, the patient and above all the public health officer obliged to determine the practicability of a mass immunization programme. The weighing of these four factors one against the other and the consideration of the differing points of view of private practitioner and public health officer certainly provide a selection of reference points from which to evaluate an immunization procedure, but all are important if the interests of both individual and community are best to be served.

#### TINTED SPECTACLES.

Most medical practitioners are aware of the fact that the widespread modern habit of wearing tinted spectacles is not desirable, but they are not always clear about the details of the matter. It is obvious, of course, that the cheap types of dark glasses, especially those worn for their alleged capacity to add to the charm of the wearer, are rarely selected on any scientific basis. The problem becomes rather more subtle in relation to tinted optical lenses and skilful advertising propaganda may deceive even the very ophthalmic elect. To clarify the position, the Council on Physical Medicine of the American Medical Association has given approval to an article by Alfred Cowan,<sup>1</sup> which has been approved also by a group of leading American consultant oculists. Cowan points out that the purpose of light-filtering glasses is to protect the eyes against painful or harmful light. Unless the eyes are sick or abnormally sensitive, dark glasses are indicated only in the presence of extraordinary, excessive or misdirected light. Healthy, properly corrected eyes should be well able to tolerate bright sunlight unless it is reflected indirectly into the eye by water, snow, sand or the like. The sole purpose of so-called "sun-glasses" is to reduce considerably the amount of direct or reflected sunlight on those occasions when the amount is so great that it interferes with vision. On the occasions when protection is necessary, the glasses should be dark enough to absorb from 60% to 75% of the light and they should be colourless—smoke or grey. Any person with normally healthy eyes should be comfortable under ordinary bright sunlight. Those who would be annoyed by less than unusually brilliant sunlight should be rare exceptions, not the rule. Tinted lenses should not be worn indoors under properly placed artificial light and never outdoors at night. They are dangerous for night driving; the glare of an automobile headlight is due to the contrast with the surrounding darkness and no type of tinted glass can change that. The sense of ocular fatigue after day driving is more often due to uncorrected or improperly corrected errors of refraction or of muscle tone than to the bright light. The lighter shades of coloured glass—tints that are hardly perceptible—offer little more protection against glare than clear glass, according to Cowan, and the suggestion sometimes made that some degree of tinting should be incorporated into nearly every lens prescribed quickly reduces itself to absurdity. Most ophthalmologists will be aware of these facts, but it is desirable that the general practitioner should assist in breaking down the faulty ideas that have grown up around tinted spectacles and discourage their unnecessary use. The results may be just as falsely comforting as the viewing of the modern scene through metaphorical rose-coloured spectacles.

<sup>1</sup> The Journal of the American Medical Association, April 24, 1948.



## Abstracts from Medical Literature.

### PHYSIOLOGY.

#### Displacement of Blood from the Lungs by Pressure Breathing.

W. O. FENN, A. B. OTIS, H. RAHN, L. E. CHADWICK AND A. H. HEGNAUER (*The American Journal of Physiology*, December, 1947) report part of a programme of research on the effects of positive pressure breathing on the peripheral circulation. Simultaneous measurements were made during pressure breathing of the increase in volume of the lower part of the leg which was enclosed in a plethysmograph and of the increase in weight of the caudal end of the body as indicated by the change in balance of a teeter-board on which the subject lay supine. From these results it may be calculated that an increase of pulmonary pressure of 30 centimetres of water displaces 500 millilitres or about half of the blood contained in the lungs; this represents about 8% to 10% of the total blood volume. About 3% of the total blood volume goes into the extremities and the remainder into the abdomen. When the individual is in the standing position there is less blood in the lungs, and the amount which can be displaced by pressure breathing is correspondingly less. By the use of a boot plethysmograph it is shown that the onset of pressure breathing causes an increase in foot volume due to passive inflation of the veins. If these passive changes are avoided by the previous inflation of a pneumatic cuff at 60 millimetres of mercury placed on the leg above the plethysmograph, then the onset of pressure breathing causes a decrease in the volume of the leg due to vasoconstriction.

#### Skin Cooling in Relation to Breathing.

V. DE LALLA, JUNIOR (*The American Journal of Physiology*, January, 1948), presents further evidence from skin temperature and plethysmograph measurements to show that positive breathing results in a peripheral vasoconstriction. This reflex does not depend upon an expansion of the chest, because it occurs equally well in negative pressure breathing and equally well or perhaps even better when expansion of the chest due to positive pressure breathing is prevented by the wearing of a pneumatic vest by the subject. A similar reflex occurs after either a single deep rapid inspiration or a single deep rapid expiration. It is thought likely that the vasomotor reflex incident to a deep inspiration and negative pressure originates from pressor receptors in the right auricle and intrathoracic large veins.

#### Salivary Flow and Thirst.

J. H. HOLMES AND M. I. GREGERSEN (*The American Journal of Physiology*, December, 1947) review the mechanism already suggested for the sensation of thirst and report the results of experiments on a group of 25 males who were receiving salt injections for the treatment of peripheral vascular diseases. They state that in man the thirst produced by the intravenous injection of 300 millilitres of 5% sodium chloride

solution was found to be associated with a reduction in salivary flow. This is consistent with the "dry mouth" theory of thirst. The changes in serum concentration of sodium, chloride and protein following the injection indicated an increase of 5% to 10% in plasma and extracellular volumes. Ingestion of water (400 to 600 millilitres) twenty to thirty minutes prior to the salt injection alleviated the severe thirst usually experienced and prevented the reduction in salivary flow. Nevertheless the rise in serum chloride concentration and the drop in serum protein concentration were of the same degree as in the other experiments. This suggests that thirst and salivary flow are sensitive to fluid changes which are not measured by such indices as changes in serum concentration of protein, chloride and sodium.

#### Fructose and Fructolysis in Semen in Relation to Fertility.

T. MANN (*The Lancet*, March 20, 1948) has shown that the survival of spermatozoa in ejaculated semen depends largely on the amount of fructose in the seminal plasma. The formation and secretion of fructose in the male accessory sexual glands are controlled by the testicular hormone. The amount of fructose present in semen can easily be measured by a colorimetric method. A low level of fructose in the semen suggests either hormonal or spermatozoal deficiency, but a high semen fructose level does not necessarily indicate spermatozoal efficiency. The level is normally subject to fluctuation. Fructose disappears from the semen when it is incubated *in vitro*; the rate of fructolysis indicates the degree of metabolic activity of the spermatozoa. Fructolysis plays an essential part in the survival of spermatozoa stored for artificial insemination.

#### Physiological Icterus of the Newborn.

A. LOEWY AND L. W. FREEMAN (*The American Journal of Physiology*, January, 1948) report serum bilirubin levels recorded in fifty normal infants. The blood samples were obtained from the cord at birth and from the external jugular vein after five days. The infants were divided into four groups and fed a diet containing 0.03%, 1.8%, 3.6% and 5.5% fat respectively. Their results show that infants are born with serum bilirubin levels of approximately 1.36 milligrammes per centum. On the fifth day of life, infants on routine feedings had a serum bilirubin level of 5.41 milligrammes per centum, those fed on formulae with reduced fat content had a level of 4.21 milligrammes per centum, and those fed on practically fat-free diets had a level of 3.09 milligrammes per centum. These findings indicate that approximately 50% of the hyperbilirubinemia of the newborn can be explained on the basis of hemolysis resulting from the ingestion of fat.

#### Vasodilatation in the Extremities in Relation to Meals.

G. M. ROTH AND C. SHEARD (*The American Journal of Physiology*, January, 1948) report some further experiments concerning the significant rise occurring in the skin temperature of the fingers and toes following the ingestion of a substantial meal. In these experiments fifty-two observa-

tions, including observation of skin temperature of the extremities, blood pressure, pulse rate, mouth temperature and basal metabolic rate in each instance, were made on 24 young normal subjects before and after the ingestion in rather close succession of one to four meals of 500 to 800 Calories each. The rise in the skin temperature of the extremities in the average case was greater and maintained for about an hour longer after the ingestion of three meals than after one or two meals, and an additional two hours of vasodilatation was obtained after the ingestion of four meals in rather close succession. The maintenance of vasodilatation as evidenced by skin temperatures of the extremities was partially dependent on the initial basal metabolic rate and the lack of sweating.

### BIOCHEMISTRY.

#### Blood Glucuronidase.

W. H. FISHMAN *et alii* (*The Journal of Biological Chemistry*, April, 1948) have adapted the method for determining glucuronidase activity with phenolphthalein glucuronide as substrate to the assay of glucuronidase in the blood. This procedure has the advantage of greater flexibility in its use and freedom from interfering substances in blood. In addition, the process of manufacturing biosynthetic phenolphthalein glucuronide has been improved and simplified. By means of this method, it has been possible to show that the major portion of the glucuronidase activity of the blood is concentrated in the leucocytes and lymphocytes of the formed elements, little or none being present in erythrocytes and platelets. A substantial amount of white blood cell glucuronidase can be removed from the intact cells by washing them with Tyrode's solution.  $\beta$ -glucuronidase activity has been demonstrated in saliva, gastric juice, spinal fluid, urine and tears, which suggests that the enzyme can be secreted by the glandular epithelium. These observations have been discussed in relation to the possible function of the enzyme in processes of metabolic conjugation.

#### Plasma Catalase.

R. S. DILLE AND C. H. WATKINS (*The Journal of Laboratory and Clinical Medicine*, April, 1948) have presented a discussion of the various states in which an increased amount of plasma catalase might theoretically be expected. By means of a method previously described, plasma catalase values have been determined in a number of disease states in which elevated levels might be expected. Elevated levels were found in acquired hemolytic anemias and in some familial hemolytic anemias. Differences in plasma catalase values of splenic arterial blood and venous blood were found. Increased plasma catalase values were present in pernicious anemia and rapidly fell to normal with treatment. Increased amounts of catalase were present in the plasma in some cases of chronic renal disease. Moderate to marked plasma catalase activity was found after prostatectomy in which distilled water was used as the irrigating medium. In sundry other diseases in which excessive plasma catalase values

would not be expected normal values were found. The determination of plasma catalase levels may be of practical value in diagnostic problems. The ratio of haemoglobin to catalase did not vary from normal in the disease states studied. Thus, variation in the catalase content of erythrocytes was not a determining factor in the changes from normal found in plasma catalase values in the cases presented.

#### The Thromboplastic Effect.

E. CHARGAFF (*The Journal of Biological Chemistry*, March, 1948) has shown that the thromboplastic protein, following its reaction with prothrombin, can be recovered by high-speed centrifugation with full activity. This finding lends strong support to the conception of the enzymatic nature of the thromboplastic agent. The thromboplastic protein, when caused to sediment from a fibrinogen solution and treated with thrombin, retains full activity. Guanidine, sodium desoxycholate, and to a lesser degree strong sodium chloride, have a far-reaching effect on this lipoprotein. Of particular interest is the action of desoxycholate, with the aid of which it has for the first time been possible to separate a non-sedimentable disintegration fragment with considerable thromboplastic activity. The ultra-violet absorption spectrum of the thromboplastic protein is reported and spectroscopic observations and general remarks on the mechanism of the thromboplastic effect are included.

E. CHARGAFF AND C. GREEN (*ibidem*) have studied the inhibition of the thromboplastic effect. The trivalent cations scandium, yttrium and lanthanum have been shown to be the most potent inhibitors. Sodium desoxycholate also had a very appreciable activity. The mechanism of the inhibition is discussed.

#### Urea Synthesis.

P. P. COHEN AND M. HAYANO (*The Journal of Biological Chemistry*, February, 1948) have reported further studies in the synthesis of arginine from citrulline and citrulline from ornithine, carried out with tissue homogenate fractions obtained by differential centrifugation. The enzyme system catalyzing the citrulline-arginine reaction has been resolved into two parts, a soluble synthesizing enzyme fraction and an insoluble hydrogen transport fraction which appears to include the cytochrome system. The enzyme system catalyzing the ornithine-citrulline reaction is associated with the insoluble residue of the liver cell. Supplementing of the residue with magnesium ions in addition to the requirements prescribed for the whole homogenate system is necessary for optimum activity. Both AMP and ATP are almost equally effective with residue. The significance of these findings in relation to the Krebs-Henseleit urea cycle is discussed.

#### Oxidative Phosphorylation in Dystrophy.

J. P. HUMMEL (*The Journal of Biological Chemistry*, February, 1948) has studied the phosphorylation of creatine by normal and dystrophic hamster and guinea-pig muscle homogenates in the aerobic and anaerobic oxidation of glycerophosphate and fructose-1,6-diphosphate in the presence of the

necessary known cofactors. With glycerophosphate as substrate, the aerobic and anaerobic oxidation rate by dystrophic guinea-pig muscle was little different from the normal, but the coupled phosphorylation of creatine was greatly diminished. With fructose-1,6-diphosphate, the effects of dystrophy were similar but less marked. Dystrophy appeared to affect the aerobic phosphorylation more than the anaerobic. In dystrophic hamster muscle homogenates, both oxidation and phosphorylation processes were impeded. These alterations appear to be indirect effects of vitamin E deficiency, but may partially explain the associated paralysis. Dystrophy in hamster and guinea-pigs greatly lowers the muscle adenosine-triphosphatase activity and is interpreted to mean that the contractile structure in dystrophic muscle is also impaired.

#### Tocopherol Phosphate in Respiration.

J. P. HUMMEL AND D. H. BASINKI (*The Journal of Biological Chemistry*, February, 1948) have found that the oxygen consumption of skeletal muscle strips from dystrophic rabbits with a deficiency of vitamin E was approximately double that of muscle strips from normal rabbits. The oxygen consumption of muscle slices was much lower than that of the corresponding muscle strips, especially in the case of dystrophic muscle. In contrast to previous reports from this laboratory, the addition of a-tocopherol phosphate *in vitro* had no significant effect on the respiration of muscle strips or slices from either normal or dystrophic animals.

#### Acetylation.

T. R. RIGGS AND D. M. HEOSTED (*The Journal of Biological Chemistry*, February, 1948) report that normal rats were found to acetylate 70% of the amount excreted in twenty-four hours after a 1.0 milligramme or 2.5 milligramme dose of p-aminobenzoic acid administered intraperitoneally. Rats rendered deficient in pantothenic acid acetylated only 50% of a 1.0 milligramme dose and 37% of a 2.5 milligramme dose. Simultaneous injection of 1.0 milligramme of calcium pantothenate into deficient animals immediately brought back their acetylation to normal. The effect of added acetate, twenty-four hours' fasting, and the size of the dose on the degree of acetylation have also been investigated.

#### MEDICINE.

##### New Antibiotic Agents.

HOWARD FLOREY (*The Journal of the American Medical Association*, December 20, 1947) states that some hundreds of fungi are known to produce antibacterial substances, and new substances are produced in purified or crystalline form almost every day. The substance helvolic acid or fumigacin is effective against many organisms, but bacteria readily acquire resistance to it. Actinomycetes have produced a number of antibiotics including actinomycin, streptothricin and streptomycin. Streptothricin has certain antibacterial properties, but is too toxic for general use. Certain bacteria have been in-

vestigated for antibacterial powers, and gramicidin, subtilin, bacitracin, bacillin and other substances have been produced and tested experimentally without outstanding results. From *Pseudomonas pyocyanea* several substances have been prepared with antibacterial properties, but they appear to be too toxic for medical use. Attempts are being made to produce substances from *Escherichia coli*, the streptococcus, the staphylococcus and *Bacillus cremoris*, which have antibacterial powers, but at present very little is known about these substances. The question of resistance to the antibiotics is a very involved one and each antibiotic presents its own problems. For instance, certain strains of *Escherichia coli* produce substances which inhibit the growth of certain other strains of *Escherichia coli*, but not all. Whatever the results of investigations now proceeding, it is safe to say that further antibiotics will be produced of value in medicine.

##### Viral and Rickettsial Diseases.

T. M. RIVERS (*The Journal of the American Medical Association*, January 31, 1948) describes recent advances in the treatment of viral and rickettsial diseases. Generally the sulpha drugs and penicillin have been found ineffective against this group of diseases. Recently, however, some success has been reported with sulphadiazine and penicillin against the psittacosis-lymphogranuloma group. Para-aminobenzoic acid and nitroacridine have both been employed against these same infections, and para-aminobenzoic acid has been valuable in the treatment of epidemic typhus, murine typhus, scrub typhus and Rocky Mountain spotted fever, if given in sufficient amounts. It is said that the viruses and rickettsiae are themselves not inactivated or injured by treatment, though their further multiplication ceases.

##### Diabetes Mellitus.

R. A. NELSON (*The American Journal of Digestive Diseases*, November, 1947) discusses the pathophysiology of diabetes mellitus. He mentions heredity as an aetiological factor, and deals with the influence of the pituitary, thyroid, adrenal cortex and liver in a regulating capacity. Obesity is often associated with diabetes. Arteriosclerosis is the greatest danger and manifests itself frequently in retinopathy. Refractive errors occur also as a result of changes in the sugar concentration in the aqueous fluid. Diabetic cataract is of a definite type, and not related to senile cataract. Diabetic neuropathy has been proved to be not related to vitamin deficiencies. The relationship of the pituitary gland to diabetes is still unsettled and the same applies to the adrenals. There is an increased incidence of diabetes in hyperthyroidism, but the significance of this fact is uncertain. Sex hormones have no apparent relationship to diabetes. In acute infections and in advanced liver disease carbohydrate metabolism may be affected. Alloxan will destroy the  $\beta$  cells of the islets of Langerhans, but its relationship to diabetes is still uncertain. The same applies to phloridzin diabetes. So far as insulin is concerned, it appears that insulin causes a reduction in the glycogen content of the liver proportional to the dose, and further work is being done in this connexion.



## British Medical Association News.

### ANNUAL MEETING.

THE annual meeting of the South Australian Branch of the British Medical Association was held at the Verco Theatre, Institute of Medical and Veterinary Science, Adelaide, on June 23, 1948, Dr. F. L. WALL, the President, in the chair.

### Annual Report of the Council.

The annual report of the Council was received and adopted on the motion of Dr. E. Britten Jones, seconded by Dr. B. S. Hanson. The annual report is as follows.

At the annual general meeting held on June 25, 1947, the following officers and members of the Council were elected:

**President:** Dr. F. L. Wall.

**Vice-President:** Dr. A. D. Lamphee.

**Honorary Treasurer:** Dr. P. T. S. Cherry.

**Honorary Medical Secretary:** Dr. Robert F. West.

**Ordinary Members of Council:** Dr. L. L. Davey, Dr. G. L. Bennett, Dr. S. J. Douglas and Dr. J. E. Hughes. (Owing to the elevation of Dr. Lamphee to the position of vice-president, Dr. C. D. Swaine was appointed to complete Dr. Lamphee's term of office.)

At a meeting of the Council held on July 3, 1947, the following subcommittees were appointed:

**Scientific:** Dr. J. E. Hughes, Dr. F. L. Wall and Dr. R. F. West.

**Contract Practice and Medical Planning:** Dr. L. L. Davey, Dr. S. J. Douglas, Dr. J. M. Dwyer, Dr. L. R. Mallen, Dr. C. O. F. Rieger, Dr. R. John Verco.

**Ethics:** Dr. G. L. Bennett, Dr. P. T. S. Cherry, Dr. J. M. Dwyer, Dr. C. E. King, Dr. A. D. Lamphee, Dr. R. F. West.

**Parliamentary Bills:** Dr. P. T. S. Cherry, Dr. L. R. Mallen, Sir Henry Newland, Dr. R. John Verco, Dr. F. L. Wall.

**Publicity Committee:** Dr. A. D. Lamphee, Dr. R. John Verco, Dr. F. L. Wall.

**Library:** Dr. J. M. Dwyer, Dr. J. E. Hughes, Dr. A. D. Lamphee, Sir Henry Newland, Dr. R. F. West.

**Tuberculosis:** Dr. D. R. W. Cowan, Dr. H. M. Jay, Dr. J. L. Hayward, Dr. K. S. Hetzel, Dr. P. S. Messent.

The President is *ex officio* a member of all committees, as are also the Immediate Past President, Vice-President, Honorary Treasurer and Honorary Medical Secretary.

Dr. G. L. Bennett retired as a country member of Council on December 4, 1947. At a meeting of the Council held on January 8, 1948, Dr. G. Wien-Smith was appointed to serve on the Council as a country member until the date of the next annual meeting (*vide* Rule 44).

### Monthly Scientific Meetings.

Seven meetings were held during the year up to May 20, 1948, and all were well attended.

Of special interest to members was the Listerian Oration delivered on Thursday, March 11, 1948, by Sir Hugh Cairns, Nuffield Professor of Neurosurgery at Oxford University.

This was the first revival of the oration since 1941, and it was pleasing to welcome such a distinguished member of the profession who had graduated in our own medical school. A large gathering attended the oration, and our thanks are due to Sir Hugh for his brilliant address. It was arranged through the courtesy of the Royal Australasian College of Surgeons.

The following programme was carried out:

July 31, 1947: Dr. H. McI. Birch ("Prefrontal Leucotomy: The Surgical Treatment of Mental Disorders").

October 30, 1947: Clinical evening arranged by the honorary medical staff at the Adelaide Children's Hospital.

November 27, 1947: Dr. D. R. W. Cowan ("Experiences in Tuberculosis Abroad").

February 26, 1948: Dr. M. E. Chinner ("Some Aspects in the Management of a Case of Jaundice").

March 11, 1948: Listerian Oration.

April 29, 1948: Dr. F. Ray Hone ("Headache").

May 20, 1948: Clinical evening, Repatriation General Hospital.

In addition to the above, invitations were given to members to attend the lectures given by Professor Gerard, of Chicago University, on Thursday, September 18, and Wednesday, September 24.

The Anesthetic Section of the Branch held film evenings on Thursday, August 21, 1947, and Thursday, April 22, 1948, to which members of the association were invited.

Members were invited to meetings of the Royal Australasian College of Surgeons held on Wednesday, August 13, and Wednesday, November 19, 1947.

### Membership.

The membership of the Branch is 557, an increase of 25 over the previous year. The number of new members elected was 34 and the balance results from deaths, transfers and resignations. It is with sincere regret that the Council records the deaths of Dr. Henry Gilbert, Dr. H. R. Letcher, Dr. F. J. Chapple (who completed fifty years' membership during the year) and Dr. Leon Opt.

### Representation on Boards et cetera.

**Medical Board of South Australia:** H. H. E. Russell.

**Dental Board of South Australia:** J. W. Close.

**Nurses' Board of South Australia:** A. B. Russell.

**Australian Aerial Medical Services Council:** J. M. Dwyer.

**Australian Red Cross Medical Services Advisory Committee:** F. L. Wall.

**Federal Council of the British Medical Association in Australia:** H. S. Newland and R. John Verco.

**Saint John Ambulance Association:** H. H. Hurst.

**Representative of "The Medical Journal of Australia":** E. F. Gartrell.

**British Medical Hall Company Directorate:** G. H. Burnell and P. T. S. Cherry.

**Mothers and Babies' Health Association:** R. John Verco.

**Panel of Medical Referees under the Provisions of Section 97 (a), Subsection 7, of the Workmen's Compensation Act:** C. T. de Crespigny, K. S. Hetzel, F. Ray Hone, E. Britten Jones, G. A. Lendon, E. McLaughlin.

**Bankers' Health Society:** J. Escourt Hughes.

Attendances at Council and Committee Meetings.	Council.	Contract Practice and Medicine Plan.	Ethics.	Salaries.	Library.	Negotiating Committee of Contract Practice Sub-Committee.
CHEERY, P. T. S. . . . .	9	1	—	—	—	4
DAVEY, L. L. . . . .	11	1	—	—	—	—
DOUGLAS, S. J. . . . .	11	2	—	3	—	—
DWYER, J. M. . . . .	12	2	1	—	3	—
HUGHES, J. E. . . . .	11	—	—	—	2	—
KING, C. E. . . . .	1	—	—	—	2	—
LAMPHEE, A. D. . . . .	12	2	2	—	—	—
MALLEN, L. R. . . . .	10	2	—	—	2	4
NEWLAND, H. S. . . . .	9	—	—	—	2	—
RIEGER, C. O. F. . . . .	12	2	—	—	—	4
SWAINE, C. D. . . . .	6	—	—	3	—	—
SMITH, G. WIEN- . . . .	2	—	—	—	—	—
VERCO, R. JOHN . . . .	12	2	—	—	—	4
WALL, F. L. . . . .	12	2	2	3	—	4
WEST, R. F. . . . .	8	2	1	—	1	—
BENNETT, G. L. (Retired December 4, 1947) . . . .	5	—	—	—	—	—
Meetings held up to June 1, 1948	12	2	2	3	3	4



### Sections.

Several of the Sections have now resumed their activities which were suspended throughout the war years.

### New Lodge Agreement.

Conferences were continued with representatives of the United Friendly Societies' Council of South Australia Incorporated and a new draft agreement was printed and circulated to members. The Federal Council requested reconsideration of three clauses of the draft agreement, and the State Council's reply on those clauses and the draft agreement itself were submitted to members at a special general meeting of the Branch held on May 13, 1948. The meeting resolved to adopt the agreement and to approve the reply which has now been forwarded to the Federal Council for their consideration. The draft agreement as it now stands included an increase of lodge surgeons' fees by approximately 47%, and provision has been made for payment for many services which were hitherto gratuitous. The income limit is raised to £500 and the "cessation of entitlement from income rise" clause has been deleted. This will protect the scope of medical beneficiaries in lodges from preclusion with the rapid mounting of wages. This agreement, for the first time, has been made between the British Medical Association as a body and all the lodges of South Australia as a group.

### The Pharmaceutical Benefits Act.

The receipt of Senator McKenna's reply to the Federal Council's four objections to the act and the tone of the Minister's broadcast on May 9 produced a somewhat favourable reaction, which, however, was entirely dissipated by the receipt ten days later of the Federal Secretary's copy of certain of the regulations. These were considered much too harsh and provocative, and at a special general meeting of the Branch held on May 13, 1948, the following resolutions were carried:

1. That this special general meeting of the South Australian Branch of the British Medical Association affirms that it is unwilling to serve under *The Pharmaceutical Benefits Act, 1948*, and recently published regulations to that act, and desires that our Federal representatives propound this view to the Federal Council meeting on May 15, 1948.

2. That this special general meeting of the South Australian Branch of the British Medical Association affirms its willingness to abide by the final decision of the Federal Council of the British Medical Association in Australia regarding *The Pharmaceutical Benefits Act, 1948*, and regulations in the present form, irrespective of whether such final decision may or may not coincide with the views of this Branch.

3. That the Federal Council be asked to obtain legal opinion as to whether the mere acceptance of the forms and formulary by a medical practitioner implies his acceptance of service under *The Pharmaceutical Benefits Act*, and promulgate precise instructions as to what members of the profession are to do when the forms and formulary under the act are received by them.

4. Any penal clause that violates the confidence and privacy as between doctor and patient is totally unthinkable.

### Plans of the Federal Government for a "Free" Medical Service.

Two special general meetings of the Branch have been held during the year in connexion with the above.

At the special general meeting held on July 24, 1947, our Federal delegates in Sir Henry Newland and Dr. R. John Verco detailed the proceedings of the conference between the Federal Council and Senator McKenna on July 17, 1947.

The following resolution was carried:

That delegates to the Federal Council be authorized to negotiate with the Minister for Health with regard to the Commonwealth Government's proposals for a complete medical service for the people of Australia on the basis that: (1) Every person in Australia shall be entitled to medical attention without regard to his economic status and without any direct charge for the service. (2) This medical service shall include the full range of medical attention including all modern diagnosis and specialist services.

An abridged report on the proceedings at the conference held between the Federal Minister for Health (Senator McKenna) and the Federal Council in July last was

circulated to members of the Branch for information. A summary on medical planning events drafted by the President was also sent to all members, so that members of the Branch should possess a coherent picture of events which have occurred in this regard up to the present time.

There is no doubt that the Federal Government is determined to bring into operation a scheme based on the following principles: (i) Every person in Australia shall be entitled to medical attention without regard to his economic status and without any direct charge for the service. (ii) The medical service shall include the full range of medical attention including all modern diagnosis and specialist services. (iii) It is envisaged by the Government that in time this scheme will completely replace private practice.

The latest policy of the Federal Council in reference to this matter is summed up in the following resolutions, which were passed at a meeting held on March 11 to 13, 1948.

1. That if the Minister of Health invited the Federal Council to a further conference, he should be respectfully requested to state on what points he desires to further confer, and that further consideration should be given to the matter on the receipt of his reply.

2. That the Federal Council should continue negotiations with the Government unless and until it is clear that any of the following principles, regarded by this Council as essential, viz.—(i) control should be vested in a corporate body, (ii) there should be no contract between the Government and the individual practising doctors, (iii) payment should be made on fee-for-service basis—are rejected by the Government.

### Revision of Scale of Fees.

During the year the Council has revised the recommended Scale of Fees in accordance with present-day living conditions. It is pointed out that wages and the cost of living generally have risen markedly since the Scale of Fees was drafted in April, 1934, and no corresponding increase has been made in fees charged by doctors. A copy of the recommended Scale of Fees will be forwarded to every member of the Branch.

### Parking of Doctors' Cars on Kintore Avenue.

Arising from action taken on the matter by the Council, a new car attendant has been engaged to supervise the parking of doctors' cars on Kintore Avenue, and a satisfactory basis of remuneration has been arranged.

### Salaries Paid to Medical Officers in State and Other Departments.

The Council has endeavoured to assist several members of the profession in reference to the raising of the standard of salaries. It is of the opinion that every effort should be made to bring salaries of members into line with present-day living conditions, and those members of the Branch who desire the assistance of the Council on this matter should not hesitate to bring the facts under the notice of Council when all possible help will be given and appropriate action taken in the matter.

### Informal Talks with the Chief Secretary.

The usual monthly interviews with the Chief Secretary have taken place during the year, and it is considered that the discussions have proved of great value to the profession as a whole. Many items of mutual interest have been brought forward and many unofficial suggestions have been made to Mr. McEwin, as Minister of Health.

### Medical Library.

The Council desires to draw the attention of members to the facilities available to them at the British Medical Association-University Joint Medical Library. All members of the association both metropolitan and country have the right to use the library for reference and for borrowing, and at a meeting of the Council held on November 6, 1947, it was decided to grant the sum of £300 towards the upkeep of the joint library for 1948. It is suggested that members use the library more extensively than at present.

### Northern Medical Association.

At a meeting of the Council of the Branch held on December 4, 1947, a letter was received from Dr. G. Wien-Smith, Honorary Secretary of the Northern Medical Association, advising that at a meeting of twenty-three medical practitioners held at Clare on August 3, 1947, it was proposed,

seconded and carried that: "This meeting of medical practitioners form a local association, to be affiliated with the South Australian Branch of the British Medical Association in the manner as set out in By-Law 10A of the Rules and By-Laws of the South Australian Branch of the British Medical Association."

The Council approved of the formation and affiliation of the Northern Medical Association and offered its congratulations on forming the first local association in this State, although the Council realized that an endeavour was made by the south-eastern practitioners to form a clinical society in 1938.

#### Post-Graduate Facilities for Returned Medical Officers and Other Doctors.

Great appreciation is expressed by all members for the courses and lectures now provided by the Post-Graduate Committee in Medicine. Returned medical officers, practising members and other graduates are enabled to refresh and improve their medical knowledge, and where applicable to pursue higher qualifications.

Our gratitude is felt for those doctors who in the initial post-war stages so planned the working of the committee as to obtain the fullest cooperation and financial assistance of the university authorities which have eventuated.

The Post-Graduate Committee in Medicine undertakes arrangements for overseas and interstate lecturers and for sponsoring of graduates for study in the United Kingdom. The possibilities of increasing the scope of visual education are also receiving attention.

Summary of post-graduate instruction services during 1947:

#### Under the Commonwealth Reconstruction Training Scheme

Pre-discharge, full time	14
Post-discharge, full time	20
Post-discharge, part time	23
Higher degree, part time	16
Non-service graduates	75

### SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).

#### Income and Expenditure Account for the Year ended December 31, 1947.

	£	s.	d.	£	s.	d.
1946						
673 To British Medical Association, London	697	15	10			
456 " THE MEDICAL JOURNAL OF AUSTRALIA	337	15	11			
17 " Amounts written off Subscriptions				1035	11	9
102 " Library Subscriptions				51	2	0
253 " Federal Council Capitation Fee				103	0	0
112 " Postages and Telegrams				266	0	0
87 " Stationery and Printing				112	12	3
35 " Telephone				171	8	0
26 " Rent				32	18	8
900 " Salaries				57	14	3
" Superannuation				1067	13	0
8 " Depreciation				43	10	0
132 " General Expenses				6	0	0
182 " Surplus Income over Expenditure transferred to General Fund Account				188	2	0
2983				176	12	4
	£3312	4	3			

	£	s.	d.	£	s.	d.
1946						
2311 By Subscriptions—						
579 City	2523	1	6			
61 Country	714	14	6			
28 " Interest	41	17	0			
4 " Medical Certificate Books				3279	13	0
				27	18	7
				4	12	8
2983				£3312	4	3

#### Library Account for the Year ended December 31, 1947.

	£	s.	d.
To Balance brought down, December 31, 1946	34	17	8
" University	150	0	0
" Depreciation	3	0	0
	£187	17	8

	£	s.	d.
By Library Subscriptions	103	0	0
" Balance, December 31, 1947	84	17	8
	£187	17	8

#### General Fund Account for the Year ended December 31, 1947.

	£	s.	d.
To Balance, December 31, 1947	3544	16	1
	£3544	16	1

	£	s.	d.
By Balance brought down, December 31, 1946	3265	6	11
" THE MEDICAL JOURNAL OF AUSTRALIA Debenture Account	72	16	10
" Australasian Medical Publishing Company, Limited	30	0	0
" Surplus Income over Expenditure	176	12	4
	£3544	16	1

#### Death of Mr. Walter C. Dobbie.

The sudden decease occurred in May, 1947, of Mr. Walter C. Dobbie, who had occupied the position of lay secretary of the Branch for nearly twenty years. All who were brought into contact with Walter Dobbie testify to his sterling character and to the value of his services which he gave so well and so willingly for so long a period.

#### Appointment of New Lay Secretary.

The difficulty in finding adequate replacement was appreciated by the Council. Mr. F. C. W. Dobbie was appointed to succeed his father. Prior to his five and a half years' war service he had acted as assistant secretary for about ten years.

Mr. J. K. Ladyman was appointed to the vacancy of assistant lay secretary.

#### Honours to Members of the Branch.

The Council tenders its congratulations to the following members on the honour conferred on them:

Promotions in the Venerable Order of the Hospital of Saint John of Jerusalem: Dr. H. H. E. Russell to grade of Knight of Grace, Dr. E. A. H. Russell to grade of Commander.

The following received their insignia of the grade of Serving Brother of the Venerable Order of Saint John following their admission to the order in recent years: Dr. Gilbert Brown, Dr. F. S. Hone, Dr. S. R. Hecker, Dr. H. H. Hurst, Dr. R. F. Matters, Dr. L. G. Tassie.

I desire to express appreciation of the help given me while president by many members of the Branch, for the cooperation of the Council and for the general spirit of unity which exists in this Branch. A steady continuance of this spirit is essential for the preservation intact of our high responsibility to guard the health and happiness of the public. The office duties have been conducted ably by the two new secretarial appointees.

(Signed) F. L. WALL,  
President.

**SOUTH AUSTRALIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION (INCORPORATED).**  
**Balance Sheet as at December 31, 1947.**

LIABILITIES.				ASSETS.			
	£	s.	d.		£	s.	d.
1946 Sundry Creditors—				1946 47 Plant and Fittings (less depreciation) .. . . .			42 7 0
104 General .. . . .	95	17	4	6 Delineascope (less depreciation) .. . . .			5 0 0
24 British Medical Association, London .. . . .	34	8	6	9 Projector (less depreciation) .. . . .			7 0 0
17 THE MEDICAL JOURNAL OF AUSTRALIA .. . . .	19	0	6	3 Lister Medals and Dies (less depreciation) .. . . .			2 0 0
				20 Medical Certificate Books .. . . .			14 11 2
3 Subscriptions in Advance .. . . .			11 16 6	2880 British Medical Hall Company, Limited—293 Shares at £10 .. . . .			2930 0 0
66 Lister Oration Fund (invested in Savings Bank as per contra) .. . . .			82 6 5	Australasian Medical Publishing Company, Limited — 5% Debentures .. . . .			30 0 0
448 British Medical Hall Company, Limited—Dividend Account .. . . .			523 11 10	THE MEDICAL JOURNAL OF AUSTRALIA—Debenture Account .. . . .			261 16 10
General Fund Account—				Sundry Debtors—			
3017 Balance as at December 31, 1946 .. . . .	3265	6	11	41 General .. . . .			42 15 6
67 Add credits relating to previous year .. . . .	102	16	10	71 Subscriptions in arrear .. . . .			31 13 6
182 Surplus Income over Expenditure for year .. . . .	176	12	4	35 Library Account .. . . .			84 17 8
			3544 16 1	54 British Medical Hall Company, Limited .. . . .			53 14 5
20 (National Bank) .. . . .				Special Accounts—Savings Bank of South Australia—			
				66 Lister Fund .. . . .	82	6	5
				Library Account .. . . .			5 4
				448 Building Fund .. . . .	473	11	10
							556 4 7
				Cash—			
				National Bank of Australasia .. . . .	35	4	6
				100 Savings Bank of South Australia .. . . .	102	13	6
				100 Commonwealth Savings Bank .. . . .	108	5	8
				8 In Hand .. . . .	3	12	10
				(Stat.) .. . . .			249 16 6
				60 .. . . .			
3948 .. . . .	£4311	17	2	3948 .. . . .	£4311	17	2

(Signed) F. C. W. DOBBIE, Secretary.

(Signed) PERCIVAL T. S. CHERRY, Treasurer.

**AUDITORS' REPORT.**

We hereby report we have examined the Books and Accounts, as produced to us, of the South Australian Branch of the British Medical Association Incorporated for the year ended December 31, 1947. In our opinion the above Balance Sheet is properly drawn up so as to exhibit a true and correct view of the affairs of the Branch as at the above date according to the best of our information, the explanations given us and shown by the books produced.

Adelaide, April 23, 1948.

MUECKE PICKERING AND COMPANY, Chartered Accountants (Aust.),  
Auditors.**Financial Statement.**

The financial statement, which is printed herewith, was adopted on the motion of Dr. P. T. S. Cherry, seconded by Dr. G. H. Burnell.

**Induction of President.**

Dr. Wall inducted to the office of president for the year 1948-1949 Dr. A. D. Lamphee and invested him with the badge of office. Dr. Lamphee thanked the members for his election.

**Election of Office-Bearers.**

Dr. Lamphee announced the election of the following office-bearers for the forthcoming year:

*Vice-President:* Dr. C. O. F. Rieger.*Honorary Treasurer:* Dr. P. T. S. Cherry.*Honorary Medical Secretary:* Dr. R. F. West.*Members of Council:* Dr. R. L. T. Grant, Dr. B. S. Hanson, Dr. A. Britten Jones, Dr. H. K. Pavy (country member).

Messrs. Muecke Pickering and Company were elected auditors for the ensuing year.

**The Retiring Members of Council.**

On the motion of Dr. J. R. Cornish, seconded by Dr. R. L. T. Grant, a vote of thanks was recorded to the retiring members of Council: Dr. C. E. King, Dr. C. D. Swaine, Dr. L. R. Mallen, Dr. G. Wien-Smith and Dr. J. M. Dwyer.

**Retiring President's Address.**

Dr. F. L. Wall read his retiring president's address (see page 141).

Dr. E. F. Gartrell proposed and Dr. J. S. Verco seconded a vote of thanks to Dr. Wall for his address. The vote was carried by acclamation and Dr. Wall replied.

**SCIENTIFIC.**

A MEETING of the New South Wales Branch of the British Medical Association was held on December 4, 1947, at the Saint George Hospital, Kogarah. The meeting took the form of a number of clinical demonstrations by the members of the honorary staff of the hospital. Parts of this report appeared in the issues of July 3, 24 and 31, 1948.

**Osteomyelitis of the Spine.**

DR. CARLYLE HUDSON discussed the clinical history of a male patient, aged forty-seven years, suffering from osteomyelitis of the lumbo-sacral portion of the spine. X-ray films were shown to demonstrate the progress of the disease to complete healing with fusion of the fifth lumbar vertebra with the sacrum. Treatment was carried out with immobilization in a plaster bed and the administration of penicillin. The plaster bed had been used until X-ray examination showed that healing had taken place. This took five months. The patient was then allowed up with a Thomas posterior spinal support, which he wore for six months. The patient had a moderate range of painless movement in the lumbar portion of the spine.

**Fracture of the Patella.**

Dr. Hudson then showed a male patient, aged seventy-two years, who six weeks previously had undergone an operation for excision of a fractured patella. The patient had full, strong, active extension of the knee and flexion beyond a right angle. He had commenced weight-bearing exercises two weeks after the operation and had made steady progress since then. He was expected to have slight if any residual disability. Dr. Hudson said that he had shown the patient to illustrate the value of the procedure in the treatment of an elderly patient.

**Anserin Bursa.**

Dr. Hudson's next patient was a male, aged fifty years, who had a moderate-sized swelling on the inner side of the



knee. This swelling had been present for five months and was associated with aching pain on exercise. X-ray examination revealed the soft tissue outline of the swelling and osteoarthritic changes in the knee joint, with diminished joint space on the medial side. The swelling was due to an enlarged bursa situated between the joint capsule and the tendons of the sartorius, the gracilis and the semitendinosus (*pes anserina*). It was to be differentiated from a cystic medial meniscus and from a ganglion. Radical excision was indicated when warranted by the symptoms.

#### Tendon Transplantation for Radial Nerve Lesion.

Dr. Hudson finally showed a female patient, aged twenty-three years, who eighteen months earlier had sustained a severe compound fracture of the right humerus associated with an irreparable lesion of the radial nerve. The classical tendon transplantation operation had been carried out seven weeks prior to the meeting, the *pronator teres*, the radial and ulnar flexors of the wrist and the *palmaris longus* being utilized. Active use of the transplanted tendons was commenced five weeks after the operation, with occupational therapy and physiotherapy. Even at the time of the meeting the patient was able to demonstrate a good range of active extension of the wrist, thumb and fingers. Dr. Hudson remarked that the case illustrated the value of tendon transplantation when the radial nerve was damaged beyond repair.

#### Fracture of the Femur Treated by Kuntscher Nail.

Dr. H. C. BARRY showed a female patient, aged fifty-eight years, who had fallen and broken the shaft of her left femur on March 13, 1947. She had previously broken the shaft of the right femur in 1940; it had united rapidly with some shortening. The fracture of the left femur was treated by strapping extension in a Thomas splint. Subsequent X-ray films revealed little attempt at union, and in addition, general decalcification of the femur. The blood chemistry was normal. The patient was suffering from hypertension and chronic bronchitis, and was consequently unsuitable for treatment in a plaster spica. It was thought that without plaster fixation a tibial graft or external plate would not hold in the decalcified bone. On October 28 operation was performed, the anaesthetist being Dr. A. H. Hodge. The fracture site was exposed. The bones, especially the distal fragment, were grossly decalcified and no callus was present. A ten-inch Kuntscher nail was introduced through a hole in the greater trochanter and directed down the medullary canal of both fragments. The left iliac crest was exposed and cancellous bone chips were removed and packed around the fracture site. The patient was nursed in a Thomas splint sitting up in bed. Recent X-ray films showed that the nail was in position and union was proceeding.

#### Foetal Death due to Rh Subgroup.

Dr. N. H. W. SAXBY showed a female patient, aged twenty-five years, who had undergone an appendicectomy in 1937 and a diagnostic curettage in 1943. She had had no fevers and no previous blood transfusions. Her first pregnancy, in 1939, had resulted in the birth of a living child; hemorrhage from the umbilicus had necessitated a blood transfusion. Her second pregnancy, in 1941, had resulted in the delivery, one month prematurely, of a stillborn infant. Her third pregnancy, in 1944, had resulted in the birth, one month prematurely, of a child suffering from *hydrops foetalis*, which lived for ten minutes. Her present pregnancy was the fourth. The expected date of confinement was October 31, 1947, and she was actually confined on October 11. She had had severe abdominal pain throughout the pregnancy, with vaginal hemorrhage at times. She had been given "Lipo-Lutin", five milligrammes twice a week, throughout the period of her attendance at the hospital. She had been admitted to hospital on August 12 on account of threatened premature labour and discharged on August 31. She was again admitted to hospital on October 7 on account of threatened premature labour; labour began on October 10, and she was delivered of a living male infant, which became severely jaundiced within twenty-four hours and died after seven days despite blood transfusion. A post-mortem diagnosis of *erythroblastosis foetalis* was made. The husband's blood belonged to group O and was Rh-positive (Rh<sub>0</sub>). The child's blood belonged to group O and was Rh-positive (Rh<sub>0</sub>). The patient's blood serum failed to react to the Wassermann test. Her blood belonged to group O and was Rh-positive; the latter finding was checked by the Red Cross Blood Transfusion Service. After she had been confined her blood was again typed, and was found to be Rh-negative, with complete anti-Rh<sub>0</sub> agglutinins (titre 1/128). Sterilization was advised and performed.

#### Increasing Difficulty in Labour.

Dr. Saxby also showed a female patient, aged thirty-five years, who had had nine children and one miscarriage. The seventh, eighth and ninth confinements had been complicated by post-partum hemorrhage and the necessity for manual removal of the placenta. In the tenth pregnancy premature rupture of the membranes had occurred at thirty weeks. The patient had been treated by bed rest until the thirty-sixth week, when labour commenced with the fetus lying obliquely. A lower segment Caesarean section had been performed; there was no liquor in the uterine cavity and the placenta was adherent. Convalescence was stormy.

The eleventh pregnancy had been uneventful until the thirty-eighth week, when the patient was admitted to hospital for medical induction of labour. The fetus was lying longitudinally, in the left occipito-anterior position; the vertex was not engaged, but there was no evidence of disproportion. When the resident medical officer made an examination to determine the condition of the cervix, copious hemorrhage occurred and the patient collapsed. A provisional diagnosis of *placenta previa* was made.

The patient was given intravenously glucose and saline solution and two litres of blood. Thirty-six hours later the hemoglobin value was 70%, her condition was satisfactory and Caesarean section was performed. The patient was not in labour, and the classical operation and sterilization were carried out with a blood transfusion running during the operation. The placenta lay on the anterior wall, completely covering the internal os; it had to be cut through before the child could be delivered. It was also adherent, and the patient lost much blood before the placenta could be removed and the uterine cavity closed. The child was in good condition, but had a *spina bifida*. A further two litres of blood were given, and after forty-eight hours the hemoglobin value was 50%. A further transfusion was begun, and was stopped on account of the occurrence of a reaction. At the time of the meeting the patient was being treated with iron by mouth and liver extract by intramuscular injection, and her hemoglobin value was 57%.

#### Probable Lingual Thyroid.

Dr. G. K. VINCENT showed a married female patient, aged thirty-three years, who two years previously had regurgitated about a teacupful of deep red blood into her mouth. The condition was thought to be an hæmoptysis, and she was fully investigated for pulmonary tuberculosis with negative results. Since then this had happened four times for no demonstrable reason. Early in November, 1947, while looking down her own throat, the patient noticed a lump on the back of the tongue. She informed her family doctor, who referred her to the ear, nose and throat clinic.

On examination the patient was seen to be a healthy looking woman. There was pronounced hollowing in the suprasternal region, the rings of the trachea could be plainly felt, and neither the isthmus nor the lateral lobes of the thyroid could be felt. There was a tumour about the size of a plum stone at the root of the tongue, in the mid-line. It was strictly localized and covered by intact and vascular epithelium. It felt tensely cystic and was painless. The differential diagnosis was thought to include (i) thyroglossal cyst, (ii) lingual thyroid tumour, (iii) lingual myoma, (iv) retention cyst, and (v) malignant lymphoma embracing lymphoepithelioma and lymphosarcoma.

Dr. Vincent, in discussing the embryology of the thyroid gland, said that the gland arose as an evagination of anterior pharyngeal wall at the level of the second branchial arch. It formed a solid mass of epithelial tissue, which grew caudally along the anterior surface of the larynx. It divided into right and left lobes united by an isthmus of identical tissue in front of the trachea. Another theory concerning the development of the thyroid gland was that the lateral lobes developed from the depths of the fourth branchial pouch on each side. The thyreo-glossal duct might retain its connexion with the isthmus for varying periods and reached up usually to the *foramen caecum* at the base of the tongue. The duct usually atrophied, but occasionally was not completely obliterated. When this happened, rests of thyroid tissue might remain along the course of the duct, giving rise to aberrant thyroid nodes. Chevalier Jackson, in his book "Diseases and Injuries of the Larynx", reported and illustrated a thyroid tissue tumour arising from the inner surface of the cricoid and causing hoarseness by being nipped between the cords on phonation. Bailey and Love, in their textbook of surgery, gave a brief but fairly comprehensive review of the condition. They stated that a lingual thyroid was the commonest of ectopic thyroids, giving rise to a rounded tumour at the back of the tongue beneath the *foramen caecum*. Removal of these tumours was often followed by myxoedema, because the

abnormally situated gland was the only thyroid tissue present. It had been suggested that to obviate this, portion of the removed tumour be immediately grafted elsewhere—for example, the medulla of the tibia. However, these authors made an inferred plea for conservatism in removal of these tumours, because of the risk of myxoedema.

#### Possible Sarcoidosis of Besnier and Boeck.

DR. G. A. CHAMBERS showed a married female patient, aged thirty-two years, who about eleven years earlier had developed irritable papules on the forearms, legs and forehead. Two years prior to the meeting the lesion had appeared on the back and chest. About four months before the meeting small nodules had appeared on each side of her nose. About the same time areas of pigmentation appeared on the face, neck, arms and legs. The lesion had gradually disappeared from the limbs, leaving residual areas on the medial aspect of each knee, in each groin, in the flexures of the elbows, in the anterior axillary folds, and on the dorsa of the hands and fingers. The face remained pigmented, but the upper part of the forehead and the chin were depigmented, as was the neck, except for small extensions from the facial area to below each pinna. The area of the forehead had been the site of multiple nodules, which varied in size and frequently enlarged, then subsided in two or three days, but had never entirely disappeared. Similar nodules had recently appeared on each side of the nose. The skin on the back of the hand ever since the onset had been thick and inelastic with a dull mat surface. On August 7, 1947, a biopsy specimen was obtained. On microscopic examination the outstanding feature of the histological structure was the presence in the dermis of collections of cells forming small nodules fairly sharply demarcated from the surrounding nodules; but numerous lymphocytes and a few eosinophile cells were also present, and in some of the areas fibroblasts were to be seen. No caseation had occurred and giant cells were absent. Staining by Ziehl-Neelsen's method failed to reveal acid-fast bacilli. In the overlying epidermis flattening of rete pegs was present, and spongiosis was to be seen in the Malpighian layer. The basal layer was poorly defined. Dr. C. B. Cox, who carried out the pathological examination, stated that the diagnosis was uncertain, but that in his opinion the appearances resembled those of sarcoidosis of Besnier and Boeck type more closely than those of any other condition, although the histological structure could not be regarded as typical.

On August 13 an X-ray examination revealed no evidence of sarcoid or other osseous or articular lesion in the hands; the chest appeared clear. The blood was examined on three occasions. The Wassermann test produced an anti-complementary response. On July 8 the leucocytes numbered 15,500 per cubic millimetre, 75% being polymorphonuclear cells, 16% lymphocytes, 6% monocytes, 2% eosinophile cells and 1% basophile cells. On July 15 the haemoglobin value was 10.8 grammes per 100 millilitres (77%); the leucocytes numbered 11,800 per cubic millimetre, 58% being polymorphonuclear cells, 34% lymphocytes, 4% monocytes and 4% eosinophile cells; no abnormal or immature leucocytes were found. On November 20 the haemoglobin value was 11.8 grammes per 100 millilitres (84%); the leucocytes numbered 12,500 per cubic millimetre, 73% being polymorphonuclear cells, 24% lymphocytes, 2% monocytes and 1% eosinophile cells. No abnormality was detected in the urine. The diagnosis was in doubt.

#### Nævus Unius Lateralis.

Dr. Chambers then showed a female patient, aged seven years, who when four months old had broken her left clavicle and had it strapped for six weeks. When the strapping was removed there appeared to be an abrasion in the left axilla. Small wart-like growths developed on this area, and these had gradually extended to the present linear distribution in the left axilla. Small groups of papules had appeared on the left scapula during the last nine months. Eighteen months earlier the whole area had become dark.

#### Multiple Cutaneous Horns.

The third patient shown by Dr. Chambers was an unmarried female, aged fifty years, who about three years previously had developed multiple cutaneous horns on the legs and hands. She also had punctate keratoses on the palms and keratoderma of the soles. The whole had developed since the menopause four years earlier. In addition there existed a subnormal mental state which had been present all her life. The Wassermann test produced no reaction, and there was no history of ingestion of arsenic.

#### Morphoea.

Dr. Chamber's fourth patient was a married woman, suffering from morphoea, which had developed two and a half years earlier. The area involved had begun to enlarge in February, 1947, and had grown itchy. The patient had lost her husband twenty-one months prior to the meeting and had had much family worry since the condition appeared. During the past three months ecchymosis had developed in the central area from friction. No change in the shape and size of the lesions had occurred in the past six months.

#### A Case for Diagnosis.

Dr. Chambers finally showed a male patient, who about seven or eight weeks earlier had noticed irritation on his back. Later he had felt a lump for the first time. He did not think it was growing bigger. On examination of the patient, a violaceous tumour was found, one and a half inches in diameter, two inches to the left of the mid-line, raised about a quarter of an inch, with several small irregular slightly raised plaques, extended upward to the level of the second dorsal spine and down and laterally for about two inches.

No diagnosis had been made.

#### Retropubic Prostatectomy.

DR. G. H. PFEIFFER discussed retropubic prostatectomy. He said that almost two years had passed since Milline published his description of a new technique of prostatectomy, supported by a leading article in *The Lancet* entitled "Eureka". The surgical approach between the symphysis and the bladder was briefly described, with the method of underpinning the large veins in the prostatic capsule by means of a boomerang needle, before incision of the capsule. The opinion was expressed that the operation was largely a matter of teamwork, the chief troubles being hæmorrhage and lack of good exposure. If too great force was used in the enucleation, the incision in the prostatic capsule could be torn round even to the postero-lateral surface of the prostate, where hæmorrhage would be from a great depth and correspondingly difficult to control. For good exposure, two things were essential—a totally empty bladder and a fair degree of Trendelenburg position of the patient. Obesity made for more difficult exposure, and in obese subjects the old transvesical route was probably wiser. An abnormality of the bladder, such as a large stone, papilloma or diverticulum, was also a contraindication. Control of hæmorrhage in the prostatic fossa was generally achieved by the coagulating electrode, and a large-bore catheter of the "Saint Peter's" type, with at least three windows, was regarded as essential. The aim was to have so little hæmorrhage that the catheter had no irrigation and was withdrawn on the fifth day, and the patient was then allowed up. This aim was achieved in a large proportion of cases, with no suprapubic urinary leakage. The early restoration of normal micturition and the lack of irrigation were greatly appreciated by the nursing staff.

Dr. Pfeiffer said that the surgeon preferred the Milline operation, though it was technically more difficult than the Harris operation, which was now used in his own practice as an alternative, the bladder being again completely closed and not irrigated unless it was blocked with clot. Transurethral resection was reserved as a matter of individual preference for the patient with a small fibrous prostate and for the feeble old patient. Of his last 98 prostatic operations, 45 had been of the Milline type, with no mortality, and in the series of 98 operations two patients had died, one seven days after transurethral resection from a coronary occlusion, and the other twenty-nine days after a Harris operation with closure, suddenly during an intravenous injection of heparin. Dr. Pfeiffer thought this death was probably due either to heparin sensitivity, or to sudden intravascular thrombosis or embolus. He believed that a definite advance in prostatic surgery had been achieved by Milline.

#### NOTICE.

A SPECIAL GENERAL MEETING of the Western Australian Branch of the British Medical Association will be held in the Assembly Hall, Pier Street, Perth, on Saturday, August 21, 1948, at 10.30 a.m. Dr. E. H. M. Luke, chairman of the Council of the New Zealand Branch of the British Medical Association, will speak on "Recent Developments in Social Medicine in New Zealand". A cordial welcome is extended to all members of the medical profession throughout Australia who may be in Perth at that time.



## Post-Graduate Work.

### THE MELBOURNE PERMANENT POST-GRADUATE COMMITTEE.

#### PROGRAMME FOR SEPTEMBER.

#### Lectures in Child Health by Professor J. C. Spence.

The following lectures will be delivered by Professor J. C. Spence.

Monday, September 6: "Pædiatrics and the Family: A Study in the Biology of Child Care."

Wednesday, September 8: "Diseases of the Newly Born."

Friday, September 10: "Staphylococcal Diseases in Childhood."

Monday, September 13: "Tuberculosis in Childhood."

Thursday, September 16: "Nephritis in Children."

These will be given in the main lecture theatre at the Royal Melbourne Hospital at 8.15 p.m. The fee for the course is £3 3s., or £1.1s. for attendance at each individual lecture. Members of hospital resident staffs may attend the whole course for £2 2s., tickets in this case being transferable from one individual to another.

#### Intensive Refresher Course for General Practitioners.

Lecture demonstrations will be conducted at various hospitals at 10 a.m. and 2 p.m. from September 6 to 17. Details of this course have recently been published in this journal.

#### Courses for Higher Degrees and Diplomas.

The courses for D.G.O. Part II and D.T.R.E. Part II, which commenced in July, will be continued.

Enrolments for courses should be made at least two weeks before the commencement with the Secretary of the Post-Graduate Committee, 426, Albert Street, East Melbourne, C.2 (JM 1547).

## Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Manion, Marc Denis, M.B., B.S., 1947 (Univ. Sydney), 1, Benelong Crescent, Bellevue Hill.

THE undermentioned has applied for election as a member of the Tasmanian Branch of the British Medical Association:

Rae, Douglas John, M.B., B.S., 1942 (Univ. Melbourne), 52, Liverpool Street, Hobart.

## Obituary.

### RAYMOND MERVYN LANE.

WE regret to announce the death of Dr. Raymond Mervyn Lane, which occurred on August 1, 1948, at Ashfield, New South Wales.

## Notice.

### PROPOSED FORMATION OF AN AUSTRALIAN TUBERCULOSIS ASSOCIATION.

AN effort is to be made during the meeting of the Australasian Medical Congress (British Medical Association) to be held at Perth from August 15 to 21, 1948, to take the initial steps in the formation of an Australian Tuberculosis Association. The President of Congress, Dr. D. M. McWhae, has agreed to move a resolution from the chair at the end of the plenary session expressing support for the movement. It is intended then to have a meeting called by the Western Australian Tuberculosis Association to which lay and medical persons will be invited, and it is hoped that the meeting will agree to form an Australian Tuberculosis

Association and to elect interim officers and a small executive committee charged with the responsibility of shaping an acceptable constitution and planning a programme. The date of this meeting has been fixed tentatively for Friday, August 20, 1948, at 4 p.m.

## Diary for the Month.

AUG. 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

AUG. 12.—Federal Council of B.M.A. in Australia—Perth.

AUG. 12.—Victorian Branch, B.M.A.: Organization Subcommittee.

AUG. 13.—Queensland Branch, B.M.A.: Council Meeting.

AUG. 15-21.—Australasian Medical Congress (B.M.A.), Sixth Session, Perth.

AUG. 16.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.

AUG. 17.—New South Wales Branch, B.M.A.: Medical Politics Committee.

## Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

**New South Wales Branch** (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmalm United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

**Victorian Branch** (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

**Queensland Branch** (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute; Brisbane City Council (Medical Officer of Health) Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

**South Australian Branch** (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

**Western Australian Branch** (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

## Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such notification is received within one month.

**SUBSCRIPTION RATES.**—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rate is £2 per annum within Australia, payable in advance. The rates for subscribers outside Australia may be obtained by applying to the Manager.



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